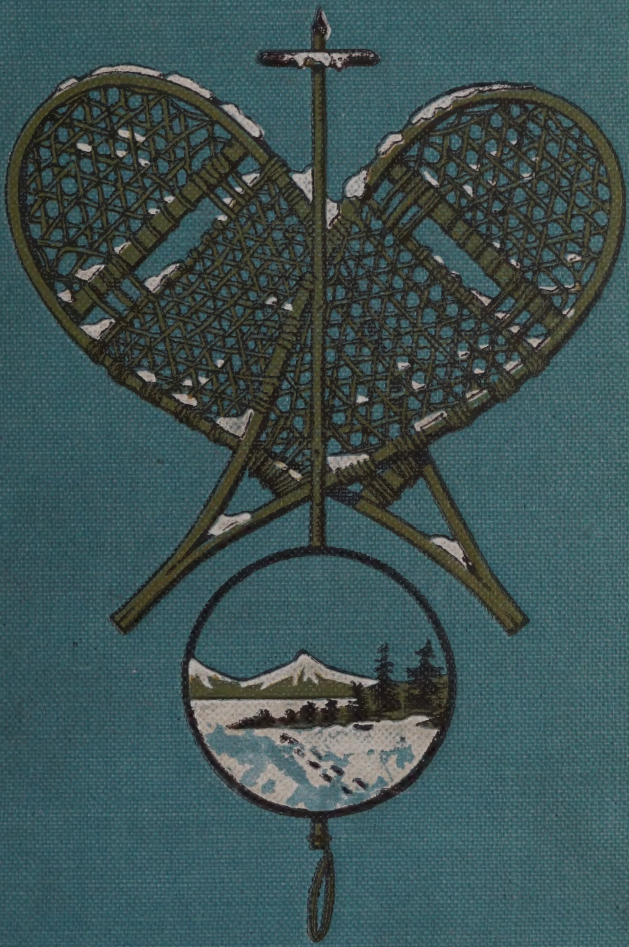
The Book of WINTER SPORTS



W. Dustin White

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The Book of Winter Sports

A LEAF OF DAME NATURE'S AUTOGRAPH ALBUM (*page* 238)

THE BOOK OF WINTER SPORTS

BY
W. DUSTIN WHITE

WITH ILLUSTRATIONS FROM
PHOTOGRAPHS BY THE AUTHOR

BOSTON AND NEW YORK
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TO

MY FATHER

AND

THE MEMBERS OF MY OWN FAMILY

Who, by assuming duties that were
really mine, made its writing possible,
this volume is affectionately dedicated.

Preface

It has always seemed to me that if it were necessary to explain a book in its preface and to give the reasons for its existence, the book itself had better never have been written. If this *Book of Winter Sports* fails to explain itself and to make its purpose apparent, then it will fall far short of the aims of the author.

A part of the material herein has appeared, in different form, in the various outdoor publications of the country, but it has all been carefully rewritten and brought up to date. I am deeply indebted and very grateful to Mr. R. K. Wood, managing editor of *Fur News and Outdoor World;* to Mr. Claude King, editor of *Sports Afield;* to Mr. Reginald T. Townsend, editor of *Country Life;* to Mr. Eltinge F. Warner, publisher of *Field and Stream;* to Dr. W. A. Bruette, editor of *Forest and Stream;* to Mr. Albert Britt, editor of *Outing;* to Mr. C. O. Tatham, editor of *Rod and Gun;* and to Mr. Dan. B. Starkey, editor of *Outdoor Recreation,* for their kind permission to rewrite material of

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W. Dustin White

Ryegate, Vermont
August, 1924

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THE BOOK OF WINTER SPORTS

Chapter I

GETTING ACQUAINTED WITH JACK FROST

It may sound like whimsical nonsense, this idea of getting acquainted with Jack Frost, but it is not. It does seem queer that any one, whether it be an actual character or a personified season, could be with us and associated intimately with us, for six months out of each year, and we not know him well. But it is a fact, and a deplorable one, too, that only a small per cent of our great army of vacationists really know the season of winter and all that it has to offer. And we have no one to blame but ourselves. We haven't tried to cultivate our acquaintance with Jack Frost, but have slighted him, avoided him, and he has human nature enough in his make-up to resent it. Unfortunately, he presents a cold shoulder, literally and figuratively, to the vacationist who has not learned to understand

him, and he even makes aggressive advances — 'picks' on those who seek to avoid him — but makes things most pleasant for those who rub shoulders with him. If we bundle up and hug our fires, he will watch for a chance to nip us. If we step right out and wrestle with him, we find him a thoroughly good fellow. He has some boisterous ways, but he is a rollicking good playfellow and one who helps to make a holiday an enjoyable one.

My own personal acquaintance with Jack Frost was in a measure forced upon me, and in this way. From boyhood up I had been fond of outdoor life, and had devoted much spare time to hunting, fishing, mountain-climbing, and camping trips. But these outings invariably came to an end each winter soon after the first snowfall, and, with the hatches buttoned down on all outdoor activities except a little coasting and skating, I would impatiently await the coming of another spring. When the time came that I must take up some business of my own, I joined the back-to-the-land brigade and devoted my working hours to agriculture. This soon took all the leisure out of the summer months, and forced me take to the woods in winter or not at all. It was really a blessing in dis-

guise, for I have since learned the joys of winter in the open and have derived more real pleasure from the days in the snowy woods than I ever got from the summer outings.

Nor am I alone in this change of attitude with reference to the season of cold. Vacationists of the past generation were hampered by an inborn tendency to hibernate during the winter months, or to migrate with the coming of the first cold days. As soon as the Frost King seized the land in his icy grip, they sought their winter quarters, which usually consisted of a snug, warm, steam-heated burrow, high in a red-brick or brownstone walled canyon, and ventured forth only in case of necessity. They would either spend the cold season in a semi-dormant state or betake themselves to some southern clime and bask in its genial warmth. Such conditions were really deplorable, for they kept the vacationist from the enjoyment of one of the best seasons of all the year for outdoor pastimes. Happily, we are able to write this paragraph in the past tense, for conditions are improving, and the present generation is rapidly learning to know and to love the season of snow and ice. This is evidenced by the ever-increasing number

who now with snowshoes, ski, or skates, sally forth in quest of health or pleasure.

This aversion to cold weather is entirely natural. We are warm-blooded creatures, and if we would be entirely comfortable, without exertion and without exercise, we must seek a temperature, either natural or artificial, that is not far below that of our own blood. To secure this, we must either migrate to a warmer climate or hibernate within the walls of our dwellings. To migrate is all well enough if we may leave our occupations and if our finances won't suffer, but records tell us that more people are traveling north of late years, in search of winter pleasures, than are traveling south. Hibernation, however, is not good for our health — either mental or physical. We are pretty well agreed that pure air is a prime requisite to perfect health, and pure air, in winter, is quite likely to be cold air — advertisements of heating apparatus manufacturers to the contrary notwithstanding. In the effort to keep the cold air out of our houses — and this is necessary because we could live neither healthfully nor comfortably in cold rooms — most of us manage to shut in a good deal of impure air. It goes without saying, therefore, that

the air of the interior of buildings is not as good in winter as in summer, when the doors and windows are open a great deal of the time. The necessity for pure air at all times, coupled with the fact that pure air is not always found in warm rooms, makes the winter outing much more valuable than the summer trip.

Professional and business men say that they actually realize more benefit from two or three days on the snow-covered hills of winter than they ordinarily derive from a week or ten days at a summer camp. This is partly due to reasons already mentioned and partly to the fact that Jack Frost is such an admirable playfellow. He shows them that the oxygen of the sharp air, the ring of the skate, the swish of the snowshoe, the glide of the ski, and the whiz of the toboggan are just the essentials to stimulate a healthy interest in the days afield.

The cold air makes exercise a pleasure and idleness disagreeable, therefore, the winter holidays are sure to be busy, strenuous ones, while for honest enjoyment, breath-taking thrills, and pure, unadulterated fun there is nothing to equal the snow sports. They drive dull care away absolutely, and

thus afford a mental relaxation that is at once restful and refreshing. The handling of the various implements of winter sport and travel brings an entirely new set of muscles into play and so taxes the endurance and lung power that much physical benefit is assured.

If we would know King Winter at his best, however, we must seek him where he reigns supreme. Where winter is a repeated alternation of freezing and thawing, with damp winds, an uneasy thermometer, and an uncertainty of clothing, not much pleasure is assured to the vacationist. The average tourist who goes north in summer and south in winter doesn't see either season at its best, and of recent years there has been something of a reversion of this order and people are traveling north for the enjoyment of winter. The fact is that the colder it is, down to a certain point, the better for all kinds of outdoor sports on snow or ice. In order that the snow may not melt and stick to the clothing, it is necessary that the mercury hang well below the freezing point — zero is just about right. At such temperatures one may roll and wallow in the snow to his heart's content, and it will all fall from his clothing like water from a duck's back.

In the extremely cold weather, too, the ski and the toboggan slide better, the webbing of the snowshoe does not sag, the ice is hard for good skating, and everything is better for the sport of the day.

Cold is not an absolute condition, nor one to which any standard of comparison may be applied. It depends partly upon the humidity or amount of moisture in the air, and partly upon our ability to withstand it. If we shut ourselves up in a warm room, the various organs of the body become attuned to the temperature and function accordingly. Then, if we step suddenly out into the cold, we feel it because these organs are not functioning as the new conditions require. However, the crisp, sharp air seems to stimulate heart and lung action and produces good circulation. This is the internal heating plant of the body, and its efficiency is enhanced by use. Consequently, when we speak of our ability to stand the cold, we refer to the capacity of these heat-producing organs which warm us. The more time we spend outdoors in winter, the more cold we can bear, provided we maintain a high state of bodily efficiency through a proper and nourishing diet.

Poets may rant about the 'days in June,' but

there is nothing more rare or quite so nearly perfect as a clear, crisp, sunshiny day in midwinter. Even with the mercury well below zero, one seldom feels chilly when the air is clear. Instead, this crisp, sharp air gives a delightful tingle to the whole body and long breaths of it seem actually to warm the blood. It is stimulating, yea, more, it is intoxicating and under its influence one enters into the spirit of the sports with a zest which sends the blood coursing through the veins and promotes a growth of good red corpuscles.

And as for beauty! The winter storm gods have never been excelled as landscape architects. They decorate the countryside in a coat of virgin white which, charming in its very simplicity and beautiful in its spotlessness, is a sight for any eye. Especially does the beauty of the wintry landscape appeal to us after a fresh fall of snow. This spreads the walls and fences with a fluffy white frosting and drapes the trees of the forest with festoons of exquisite loveliness. And this beauty is further enhanced if we view it at sunrise when the face of Nature takes on a delicate tint that renders it more charming than when seen under the broad light of noonday.

THE WINTER STORM GODS HAVE NEVER BEEN EXCELLED
AS LANDSCAPE ARCHITECTS

Getting Acquainted with Jack Frost

I often climb to the top of a hill just back of my home in eastern Vermont to watch the sun as it comes up over the White Mountain Range of New Hampshire, and I can do it in winter without any interference with my beauty sleep, as is necessary in summer. During the winter season Old Sol takes his first peep at our corner of the universe through a break in the range just north of Mount Moosilauke. His rays strike through the Kinsman Notch and light up the end of the mountain before his face comes into view. And such a color scheme as we look upon! The white snow and dark woods close at hand blend into a gray haze which hangs over the Connecticut Valley. Beyond, rise tier on tier of blue hills culminating in the snow-capped peaks of the main ranges. These are sharply outlined against the brilliant saffron sky, their slopes ever shifting and changing as the oblique rays of the sun climb and play about the sheer precipices and over the deep gorges. Then, as though pushed upward by some unseen hand, the sun bursts into full view, converting the whole world into a study in pink and white. Each minute frost crystal takes on the brilliancy of a diamond as it catches the rays of the sun. Then, with a kick of the ski, we start on the

long, winding glide down to the woods and to the sport at hand, for the day is upon us.

It was not so very long ago that a man was looked upon as a mild lunatic who would don a pair of snowshoes or ski and wander off into the woods just for the sport of the thing, while any one who would even think of camping out in the dead of winter was considered a fit subject for the asylum. Of these things I speak from a personal point of view, for I did a little pioneering in the field of winter sports, at least so far as my own locality was concerned. But times have changed, and now I find it hard to keep up with enthusiastic friends who have learned the game. All that was necessary was that the vacationist should grasp the real truth — to know that there were fewer drawbacks connected with a winter holiday than with a summer one — and the fun of the thing took care of the rest of it.

The cold is one of the easiest obstacles in all the woods to get around. An extra jacket; another stick on the fire; a turn at the woodpile; a tramp on the snowshoes — any one of these will warm you in short order. And is there any such convenient method of cooling off when the summer weather

proves too warm? About all you can do then is to peel off another layer of clothing, which only gives the flies a better chance, and, speaking of flies, those persistent little pests of the summer woods are worse than all the discomforts of winter combined. And what is true of mosquitoes and flies will also apply to disease germs — they simply cannot live out-of-doors in winter. One may catch contagious diseases in winter, but he cannot do it outdoors. Nearly all diseases are contagious, the common cold being more so than anything else, perhaps. Arctic explorers, though exposed to the most severe cold weather, all but forgot what a cold in the head was like, but soon renewed their acquaintance when they returned to civilization and the association of other human beings.

The best evidence, perhaps, of our better understanding of Jack Frost is the increasing popularity of all of the snow and ice sports. Our summer resorts have been converted into all-year-round resorts and boast of a skating-rink as well as a croquet ground; a toboggan chute as well as a tennis court; and there is a ski jump on many of the golf links. These resorts actually report more business during the winter than in summer. The mountain

paths of summer are snowshoe trails of winter, and many a camping party goes into the woods in winter, either to occupy a remote log cabin, or actually to pitch a canvas shelter and thus get close to the frozen heart of Mother Nature. Every town of any size in our northern tier of States and all over the Dominion of Canada now has its snowshoe and ski clubs, which are active organizations and add much to the winter life of the community. Likewise the schools and colleges have added winter sports to the athletic curriculum, and are as proud of their hockey teams, their snowshoe racers and ski jumpers as of their baseball nines or football elevens.

At the winter carnivals, which are fast overshadowing the country fairs in popularity and interest, the whole countryside turns out, thus showing their interest in cold-weather sports. Contestants come from all over the continent and even from across the water to compete at these exhibitions, and people gather by the thousands to witness the contests and yell themselves hoarse as evidence of their enthusiasm. The sporting page of the daily papers is largely filled, during the winter months, with accounts of hockey games, ski and

snowshoe races, ski-jumping contests, sled-dog races, and such items of interest.

So it looks as if we, as a people, are not only getting acquainted with Jack Frost, but are also finding in him a real friend.

The point I would emphasize is this: when you are getting acquainted with Jack Frost, always meet him hand to hand. Going into winter sports is like going in swimming — dabble your feet in the shallows and the chills will play up and down your spine, plunge right in, and — 'Why, the water's fine.'

Chapter II

WHAT WINTER WOODSMEN WEAR

WHAT the winter woodsman wears, more than any other one thing, perhaps, makes or mars the winter holiday. In other words, the bodily clothing is the most essential part of the cold-weather outfit. One seldom enjoys himself unless he is physically comfortable, and one cannot be comfortable if cold; neither can he be comfortable if loaded down with an ill-chosen assortment of wearing apparel that not only proves burdensome by its very weight, but also binds the body and restricts free movement of the limbs. It is expedient, therefore, that each garment be selected with due consideration for its adaptability, its fit, its material and workmanship. After coming to some understanding as regards the general principles of keeping warm, we shall discuss the various articles of clothing, one by one.

In the first place, cold is a negative condition and heat a positive; therefore, cold does not penetrate, as is commonly supposed, but simply makes itself felt after the heat has passed away. Sufficient heat

is generated by the normal human body to keep it entirely warm, provided this heat is not allowed to disseminate. Such being the fact, the purpose of the bodily clothing is one of insulation. The best possible insulation between heat and cold is a vacuum. This is the principle back of the well-known vacuum bottles which will keep their contents hot for twenty-four hours in any temperature and cold for nearly three times as long. A vacuum is the best-known non-conductor, but since a vacuum is not possible in clothing, nor desirable, for reasons which will be mentioned later on, we must take the next best thing, which is dead air. Heat waves will travel but a short distance through dead air. As an example of this, we may take the covering which the farmer places over his yearly harvest of ice — a coat of sawdust six or seven inches thick. Now it is not the sawdust itself that keeps the heat away from the ice, but the dead air that is confined between the particles of sawdust. This same idea may be applied to our clothing, and dead air may be confined, either between the different garments which we wear, between the successive layers of any one garment, or in the interstices of the weave of the cloth itself.

While it is desirable and entirely necessary to confine the warm air next to the body, it is equally important that the moisture which is exuded through the pores be allowed to escape. This applies to the normal person taking only a moderate amount of exercise as well as to the enthusiast who, in the excitement of the sport, perspires freely. The average human adult throws off about two quarts of moisture each day in perspiration, and unless the clothing is of such material as will pass this moisture on and out into the air, the undergarments soon become damp and clammy. Then, as water is a good conductor of heat, the damp clothing forms no insulation, and the body soon becomes chilled. Such being the case, clothing which is airtight — such as rubber goods, and fabrics made from cotton which holds much moisture — are entirely unsuited for winter wear. And this, too, is the reason why a vacuum space in the clothing would not be desirable even were it practical.

Clothing made from material of animal origin, such as woolens and furs, are much warmer and better for winter wear than that which has been manufactured from vegetable material. Nature is a good clothier, and the wools and furs and feathers

with which she wraps the wild creatures afford them nearly perfect protection from the elements. These coverings are our best examples of the value of dead-air insulation, for the interstices between the hairs or feathers or fibers are filled with dead air, and in some cases, such as that of the deer, the hairs are hollow. In this confined air lies the warmth of the coat. Moreover, in the case of living creatures, this capacity for dead air is not fixed, but is changeable, either automatically to meet changing conditions, or at the will or instinct of the animal. This is true of our domestic animals, and they perhaps afford an easier example than the wild creatures. You have, perhaps, noticed how smooth the coat of a horse appears on a warm day, even in midwinter, or when he has been driven until slightly warm. The hair, lying flat, forms a firm, hard garment which is not burdensome even in mild weather. However, let a cold wind spring up, or leave the horse standing unblanketed, and this hair appears to be standing on end. This means that the air spaces contained therein have been enlarged about threefold and the warmth of the coat correspondingly increased. This propensity is not carried into the clothing which we may

manufacture from animal products, but departs with the life of the original wearer. Oil is a natural quality of all material for clothing which we secure from these sources, and it permits no absorption of water, but passes on to the outer air all moisture. Of course, some of this oil is removed in the process of carding and weaving, but much is preserved in the finished garments and explains why garments made of wool do not become cold and clammy as do those made of cotton. It is well, however, when selecting woolen garments, to get those which resemble the coat of the sheep as closely as possible; that is, light and fluffy rather than firm and closely woven.

The nearer to the body you get this insulation, the better, and a wall of airtight material between the layers of woolens will minimize the value of the outer layers almost to nil. So if you would wear a windproof and waterproof garment, wear it on the outside.

Another essential to be sought in winter clothing is its fit. Each garment must be sufficiently large as not to bind or cause any constriction, which is sure to interfere with circulation. It is upon circulation that we must depend for the generation and

distribution of heat-producing energies, and these should be conserved as much as possible. Care must be exercised, however, not to have the garments so large that they will wrinkle and fold over, for this will usually bind even worse than tight clothing. If we would be warm when the weather is cold, we must stimulate the production of bodily heat, not with artificial stimulants, but by eating proper foods and avoiding any interference with circulation, then conserve this accumulation by insulating it from the outside air.

These remarks apply to the underclothing more than to anything else, perhaps. A cotton union suit will become clammy in a very short time, and then its value for warmth has been destroyed. Wool is the only thing, and the popular aversion to woolen underwear will cease to exist when the wearer gets out into real winter weather. Two light-weight suits are preferable to one that is heavier. This provides an air space between the two — which has its value. But do not get them both of the same size. Get one to fit the body and the next one to fit over that. Some authorities argue for the two-piece suits of underwear in preference to the union suits, on the ground that if the

legs get wet from melting snow, the drawers may be changed with less bother than if one-piece suits are worn. Personally, I can get but little enjoyment from any kind of winter sport when the weather is so warm that the snow will melt upon one.

Of course, one could continue to add more layers of underclothing, but two suits are sufficient for almost any winter weather, and if more protection is needed, I prefer to add it in the form of outer garments, which may be readily removed when the activity of the wearer or the climbing of the mercury requires.

What has been said regarding underclothing applies also to socks and stockings. Several layers of light weight will be found warmer than the same weight in a single layer. And the same care should be used in selecting those with even gradations in sizes. On no condition let there be any constriction of the feet, for the extremities are much more susceptible to the cold than the body itself and more easily frostbitten.

The outside shirt should also be of wool, with good long sleeves and large neckband. A double breast on the shirt is really a good thing — breaks

joints, so to speak, with the openings in the other garments, and keeps the heart of our internal mechanism, the chest, always protected even though the coat and sweater be thrown open to the wind.

It is necessary that the trousers be of hard, closely woven wool. True, they would be warmer if they possessed a fuzzy, soft surface, but the snow would stick to them much more readily. Laced legs are also to be preferred. I used to think that the long legs afforded the more protection, but have found that this was more than offset by a bagging at the knee which collected the snow as one traveled, and eventually wet through. The laced leg draws straight down over the knee.

A light-weight sweater or knitted jacket of some kind is the next item. One of the sleeveless sweaters, such as our girls knit for the boys at the front during the war, is good to pull on over the shirt, or a sport coat or vest. These may be had in brushed wool, which makes an attractive garment and is a good material for one that is to be worn between other layers of clothing, as it is of a light, fluffy nature and provides a lot of space for dead air. Two or three light garments such as these are preferable to the same weight in one coat, for the rea-

son that they may be taken off and carried in the packsack if the wearer is too warm, not to mention the extra insulation afforded by the air space between each.

A stag shirt, or coat, of firm, closely woven Mackinaw cloth completes the main outfit so far as the person who is out for active exercise is concerned. This last-mentioned coat and the trousers may be of the same material, forming a suit. So long as one is on the move, these articles provide all the necessary protection, but if you must play a waiting game as a part of your holiday experiences, you will need more. On fox-hunting trips, where I often wish to stand for hours at a time on some high wind-swept hill, I wear a heavy Mackinaw coat, double-breasted, and having a turned-up collar. This is the most comfortable thing I ever wore, and affords all the protection, either from cold or from storm, that I care for.

A popular garment in Canada is the all-wool parka. This is similar in material to our Mackinaws, but in construction it is more like an elongated stag shirt, with opening in the front and equipped with an Eskimo hood instead of the conventional collar. One pulls it on over the head exactly as he

IF YOU MUST PLAY A WAITING GAME, A MACKINAW COAT IS MOST DESIRABLE

would a shirt and there is a drawstring which pulls the neckband tight. The parka is a favorite with Arctic explorers, for it is nearly wind-proof. This garment is of Eskimo origin, and may be had in almost any material — those of reindeer skin or some other kind of fur being the warmest. Parkas made from cotton cloth make good outer garments to keep the wind out.

Speaking of wind, while I have said that cold is a negative condition, and not penetrating, I do not imply that the breath of Old Boreas cannot drive in through the clothing. Such is most assuredly the case, and in regions where high winds prevail some kind of a windproof outer garment becomes an absolute necessity. For our New England climate I have found that good Mackinaw or Pontiac garments are sufficiently weather-resisting, but a leather vest or army jerkin will also keep out the wind fairly well. A good leather coat is about as good a windbreak as may be secured. One may get leather coats, overcoat length, lined with sheepskin, or the same thing in a canvas duck, but those are too heavy and bungling unless one expects to be standing around all the time, or riding. Unlined leather jackets come in both oil-tanned and

smoke-tanned leather. The smoke-tanned are softer and more pliable, and are comfortable so long as they do not get wet. The oil-tanned will stand considerable water and soft snow. A good leather coat with a fur collar makes a good garment when you are riding, or when you wish to stand around, as at a winter carnival, and watch some one else do the stunts. But when you wish to become an active participant in such sports yourself, you will find the leather coat too much.

A good woolen cap, with visor and fur-lined ear-laps, is about the best all-round covering for the head. Some, however, prefer the hockey cap. I have a three-in-one helmet affair, which may be worn much as is the hockey cap, and either with or without a visor, or it will unfold so as to come clear down on to the shoulders, completely covering the head and neck, with the exception of an opening for the eyes and nose. In passing, I might say that I have never been enthusiastic about the thing. The regular army aviation caps, made of leather and well lined, are about as warm as anything you can get for the head. A desirable feature of these caps is the method of tying under the chin so that they will never blow off.

What Winter Woodsmen Wear

Many lumbermen and woodchoppers will work throughout the winter with only a felt hat on the head, and do it when the mercury retires to the very bottom of the tube. They like the hat because its broad brim keeps the snow from sliding inside their collars when it is jarred from the branches of the trees they are cutting. However, it affords no protection from the wind, nor does it cover the ears at all except as it may be tilted over one or the other.

People are not all alike as regards their sensitiveness to cold; that is, certain parts of one person's body may be tender and other portions tough, while with his neighbor it may be just the reverse. I once knew a man, a teamster in a lumber camp, who would, in the parlance of the crew, 'bank' his ears with the coming of the first frosts, yet he would handle the reins in the coldest of midwinter days with absolutely no covering on his hands. The rest of the crew would be going about with only felt hats on their heads, but insisting on two pairs of mittens each. A companion who went on a snowshoe trip through the White Mountains with me one winter wore a felt hat with a narrow brim and equipped with fur-lined ear-

laps. This was a very good combination, but they are not usually offered for sale.

Mittens are far superior to gloves for low temperatures. Those of soft leather and lined with fur or sheepskin are the warmest of any, and knitted ones of good woolen yarn are fine. For hunting trips, the one-fingered mitten is most convenient.

This completes the outfit except for the feet. What has been said heretofore with regard to stockings will apply to most people, but once in a while you will meet with some one who has tender feet. I happen to be numbered in that class myself. If I wear woolen stockings next to the skin of my feet, I must needs suffer from chilblains for days to come. A light pair of cotton hose underneath the woolen ones obviates this trouble, but cotton hose absorb perspiration and become damp, and damp feet are not to be tolerated in forty below weather. I then tried silk hose, and found them eminently satisfactory. Silk is not usually thought of as an animal product, but it is just that. It is the covering which the silkworm wraps around its larva to protect it from changes in temperature. Anyway, the silk hose seem to absorb but little moisture, and are so smooth that they will never irritate the most

tender skin. Over these silk hose I wear either two or three pairs of good, home-knit, wool stockings, the outer pair having a drawstring near the top to hold them up.

Moccasins form the best outer covering for the feet if the travel is to be on snowshoes. Where the weather is a steady cold and the snow always dry, the smoke-tanned moccasin is the best, being altogether pliable, giving free motion to the muscles of the foot, and hugging the webbing and harness of the snowshoe firmly. If the snow is in the least damp, these will wet through, and should be replaced by oil-tanned moccasins or leather-topped, rubber hunting-shoes. The latter are the best if a part of the travel is to be over beaten paths and slippery logging roads.

For ski-ing or skating one must have good, stiff-soled, leather shoes — at least, the experts tell us so. For skating it is so, although the best combination for skating is to have a pair of shoes with the skates permanently attached to them and use them for skating only. As for ski-ing, if one is going in for the sport in a scientific kind of a way, he certainly will need good leather shoes. They are the only thing that will give you a sufficient lateral

control over the long blades so that you may take a high jump or execute a spectacular turn in safety. However, I have traveled on ski for many a mile on hunting trips, wearing ski with a very simple kind of a harness, and leather-topped, rubber hunting-shoes. These, if you get them without heels, are the best all-round footwear to be had. The rubber will not seriously harm the racquets if you wear them for snowshoeing. You will be able to handle the ski well enough to cover considerable ground and thoroughly enjoy yourself, even if you cannot do the spectacular stunts. And when you come out on the hard trodden roads, the rubber shoes are the best of anything.

Be sure that all footwear is large enough. Last fall I found my dealer out of my size in rubber shoes, and had to take the next size larger, and have never experienced so little trouble with cold feet.

If I am going into the woods for any length of time, winter or summer, I like to have a rubber poncho in my packsack. This may be pulled on over the head in such a way as to cover the entire person and the packsack as well. And it has a dozen other uses which are continually presenting themselves.

What Winter Woodsmen Wear

Since the winter sports are sports for either sex, it would hardly do to close this chapter without a paragraph on what winter woodswomen wear. In all the fundamental principles, the dress of the woman who goes in for the snow sports should be identical with that of the man. It is the suit for comfort and convenience. Trousers, or knickers, are far more suitable than a skirt and much less in the way. Some women, however, carry a skirt in the packsack, which may quickly be slipped on when approaching a town or before boarding a train.

The winter sports, too, have given the women an opportunity to gratify that natural feminine desire for variety and color in costume, nor have our American girls been slow to grasp this opportunity. Colors which would fairly scream on certain occasions, and contrasts which would ordinarily be impossible, are just the thing on snowshoe trips, and even the loudest colors can scarcely rival those which the cold air brings to the faces of the fair ones. Of recent years the clothiers have been catering to this winter sports trade, and some of the outfits to be seen at snowshoe parties and winter carnivals are marvels of attractiveness. Indeed, I can

imagine no more charming sight than a group of young girls, brilliantly attired in toque and scarf and sweater, and just back from an appointment with Jack Frost, the beauty specialist.

Chapter III

SELECTING THE SNOWSHOE

THE snowshoe was an original creation of the North American Indian; at least the Indian was using them when white men first came to this country, and, previous to that time, they had never been heard of in Europe. The Amerind was a past-master in the art of woodcraft, and, while he has never been noted for his inventive genius, such items as he did design have been admirably suited to the purpose for which they were made, and have always filled an important place among the equipment of later-day woodsmen and vacationists. The snowshoe, along with the birchbark canoe, the tepee, and the toboggan, has been bequeathed to us, a priceless heritage from the original dwellers of our forests. Snowshoes were designed, by the Indian, for utilitarian purposes only — to facilitate travel over the snow-covered land; and having served several generations of white men to the same end, they have more recently been adopted by the sportsman and vacationist, opening up vast

new playgrounds and broadening the field of outdoor activities to a considerable extent.

The snowshoe is the one item of this Indian legacy which the white man with all his skill and knowledge, with all his learning and tools of steel, has never been able to improve upon. Indeed, the best hand-made Indian shoes are quite superior to the average product of the white man. They are creations of the forest; made from products of the forest; so designed as to fit back naturally into the forest — light and graceful, yet strong, and seemingly imbued with something of the very spirit of their dusky-skinned originators.

The best shoes are, from start to finish, a hand-made product, and the Indian gave each step his personal attention. He sought just the right kind of tree from which to split the bows, seasoned the wood correctly and bent it into just the right shape to suit his own individual needs; chose the filler, or *babiche*, with the same care; manipulated it until the last bit of stretch was gone, then wove it in so as to make an absolutely sagless shoe with a mesh suited to his local snow conditions. Getting the stretch out of the filler is the thing the white makers have never seemed to accomplish. Occasionally we find a

white woodsman, guide, or trapper, who will make an exceptionally good shoe, but his methods are not greatly different from those of the Indian. Strict personal attention to each little detail is what counts in snowshoe construction, and for this reason the industry has not lent itself particularly well to our modern ideas of working out a theory and applying that theory to everything. A good snowshoe is the product of the human hand and human intellect — not the output of a mechanical device.

But, while I have said that the very best shoes were made by backwoodsmen, Indians, or guides, I do not mean that the commercial shoes turned out by reliable companies are not plenty good enough for the average vacationist. They are. One should, however, be careful to pick a pair without flaws, either in the bow or the filler.

So long as your snowshoeing is confined to little, near-home strolls, the choice of a snowshoe is not such an important matter. A broken shoe would mean nothing more serious than a half-hour's rather unpleasant wallowing to the nearest beaten path. But when you get back into the big North Woods, or well up on a high mountain range, where your stroll becomes a strenuous all-day

tramp and the snow is upwards of five feet deep, then you want a shoe that is adapted to your particular kind of traveling, and one that is thoroughly reliable as well. You simply cannot wallow in five feet of snow, and a broken shoe might mean your staying where it broke until the snow melted or some one passed by — either of which would probably be long delayed.

The bows, or frames, of snowshoes should be of good, second-growth white ash. This wood combines both lightness and strength, and holds its shape well after being steamed and bent on the moulds. All knots, however, should be carefully avoided, and one should see that the grain follows the bend of the wood all the way round, without running to the edge; which last would probably mean that it would split later on. Even with the best of care, snowshoes are always subjected to hard knocks, for one is forever stepping upon submerged rocks and stumps which twist and wrench them severely.

It is essential that the cross-members of the snowshoe frame be strong, and carefully mortised in place. These hold the rack of the shoe, cornerwise.

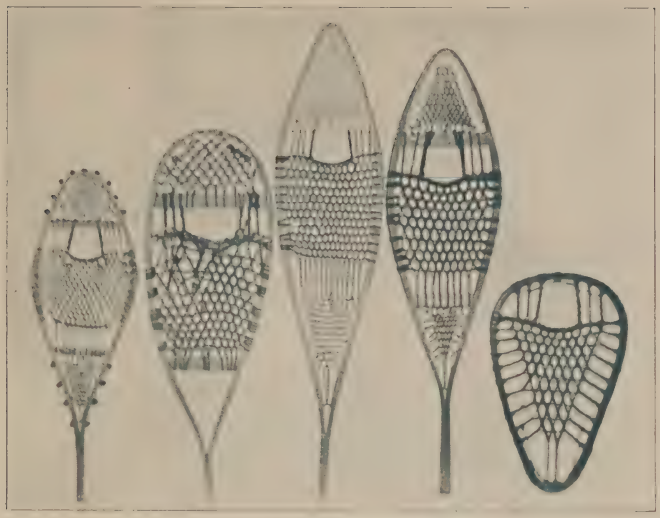
Selecting the Snowshoe

The very best filler for snowshoes is made from caribou hide. This is what the Indian invariably used, scraping and stretching, and soaking and drying, until the last bit of stretch was out of it, then weaving it in a very fine, light mesh. This was ideal for the dry, powdery snows of the extremely cold countries. In New England, where damp, heavy snows are quite the rule, and a soft, melting day by no means rare, a much coarser mesh is necessary. This carries just as well on the firm, damp surface, and allows such snow as is accumulated at the edges of the shoe to sift down through; otherwise the snowshoer must lift this additional weight at every step and carry it as he walks. Beef hides, as well as those of horse, moose, and deer, are used for *babiche*. Of these, the beef, say a good steer, is probably the best and the deer the poorest. The important thing is the way it is handled. It should be manipulated until every last possible inch of stretch has been taken from it.

There are on the market an almost endless array of sizes and styles of snowshoes. Each of the different tribes of Northern Indians had a different design of shoe which was especially adapted to the section of country, and shoes of similar design,

bearing the name of the tribe which originated them, are now put out by the regular manufacturers. Many other styles are the result of some pet theory or whim of some present-day snowshoemaker. There is a shoe for every conceivable place and purpose, so that the most discriminating buyer may gratify his tastes. A review of all the different models, and variations thereof, would prove of little value, for two reasons. First, because there is no firmly established code of nomenclature by which the different styles may be understandably designated — a given style being known to one manufacturer by one name and to another by a totally different title. And, second, because it is actually of little import to the average snowshoer. For him it is sufficient to divide them into two classes, those that have tails and those that have none. The rest is a matter of size and proportion.

When selecting the style of your snowshoe, there are three things which should be considered: the topography of the region you intend to traverse; the condition of the snow — light or packed; and the object of your wanderings. If the land is rough and broken, or if the woods are thick, you want a shoe that is short and broad; while, if it is open and



FIVE SNOWSHOE MODELS

OCCASIONALLY WE FIND A WHITE WOODSMAN WHO WILL MAKE AN EXCEPTIONALLY GOOD SHOE
(Charles F. Kittredge, of Glen, N.H.)

smooth, one that is long and narrow will be better. If the snow is light and soft, you will need a larger shoe and finer weave than if its surface be hard and firm. If your day's outing requires much turning and twisting about, you will find the short shoe the most convenient.

The tailless type of snowshoe is usually referred to as the 'bear-paw.' These models again are subdivided into two classes — those which have cross-members and those which have none. The first mentioned are the 'bear-paw' proper, while the others are sometimes referred to as the 'horse-collar.' Perhaps the cross-bars make the regular bear-paws just a little stronger, but so far as convenience and general utility are concerned, there is no great difference between these two.

I got my bear-paw shoes particularly for rabbit-hunting. I wanted to follow the little beagle into the thick, tangled heart of the cedar swamps, and found this the ideal shoe for the work. It enables one to pass rapidly through the thickest and roughest places without fouling every tree he passes or tangling up in the small brush, and, best of all, it permits the execution of a quick turn when the rabbit starts off on a new tack.

I soon found, however, that these shoes have dozens of other uses. On the frozen winter lakes I found that I could tend eight or ten lively pickerel tip-ups with greater facility with them than with a longer shoe. When cruising the spruce timber on gum-picking expeditions, they are most convenient, and they have become nearly indispensable about the winter camp, in cutting and bringing in wood, carrying water, and in doing other camp chores.

With the increasing popularity of mountain-climbing in winter, these bear-paw shoes are coming into another sphere of usefulness. While climbers are not all agreed, as yet, as to whether they can negotiate the steep slopes of a mountain more easily with a tailed or tailless shoe, there are many devotees of the latter, and the bear-paw shoe does have one distinct advantage. This lies in the ease with which they may be carried after timber-line has been passed, ice creepers substituted, and their immediate usefulness no longer felt. A pair of bear-paw shoes will go inside a good-sized pack-sack, where they will not interfere with one's progress as he picks his way across the slippery slopes on ice creepers, nor catch every breath of wind that sweeps across these upper heights.

But while I like my bear-paws very much and should hate to do without them, still I should not care to get along with them alone.

The tail is a very desirable appendage on a snowshoe that is to be worn on comparatively level going and over a reasonably straight-ahead course. It gives the shoe the correct balance and, dragging behind, serves as a rudder to keep it in line. This is more necessary than would at first appear, for, with the ordinary methods of fastening on, one has but very little lateral control of the shoes, and but for the tail they would be continually swinging afoul of each other. In some sections, say down on the Labrador, for instance, one will find tailed snowshoes that are not very different from the bear-paws, except in the way the ends of the bow are brought together. These are known as the 'swallow-tail' and the 'beaver-tail,' and are not commonly found in the display of the snowshoe dealer.

I have an old pair of snowshoes, now rather the worse for wear and not much used of late, that would come about as near filling the bill for an all-round shoe as any I have found. It is forty inches long, fourteen inches wide, and absolutely flat on the bottom. It is not so long as to be cumbersome

even in thick brush, its flat toes cling well when climbing steep slopes, and it has a good hang and balance. Snowshoes of this same general type are quite popular with forest rangers, timber cruisers, trappers, and others who work on them. These of mine were hanging in the shed at home as long ago as I can remember, and are the implements on which I became acquainted with the mysteries of web-foot wandering. Snowshoeing was not practiced as a sport in those days, and this pair was used principally for gathering sap in the maple-sugar bush. That they stood that kind of work and are still in existence is a glowing tribute to the work of the snowshoe-makers of those days. The soft snows of late winter, the sugar season, are exceedingly hard on snowshoes. The snow is wet and coarse-grained — a melted crust — the kind that stretches the webbing and cuts the meshes like a knife. And the shoes not only have to carry the weight of the wearer, but he also has a sap yoke across his shoulders with a huge pail brimming with sweet liquid at either end. Two or three days of this kind of work would put many a pair of our commercial shoes clear out of commission, yet those old ones stood it day in and day out.

Selecting the Snowshoe

While these shoes were the best I have ever worn for all-round work, I found that I could get about more easily by using two pairs — the bear-paws for camp work, rabbit-hunting, and ice-fishing, and a long, slim pair for straight-ahead work in comparatively open country

Forty-four inches long by thirteen wide are good dimensions for a tramping shoe. And when you get as much length as this in a snowshoe, it is almost necessary that the toes turn up slightly; otherwise they will be continually running under looped brush and down bushes and tripping you. By altering the proportion, without enlarging the size, one may secure a very long, narrow shoe, sometimes known as the 'Alaska trapper.' These may be had five feet in length and as narrow as ten or eleven inches. Women's shoes are not essentially different from those of men, except that the sizes run smaller, and in any shoe the amount of bearing surface will depend upon the weight of the wearer. As in anything else, it is well to avoid the extremes in snowshoe styles. One will get more practical use and more days of enjoyment out of an average-sized shoe.

As stated in the previous chapter, the best foot-

gear to wear with snowshoes are smoke-tanned moccasins. These grip the webbing and hold the thongs better than anything else, and are the very best footwear so long as the weather is cold and the snow dry. For warmer weather and melting snows, oil-tanned moccasins or leather-topped rubber hunting-shoes are preferable. Under no circumstances should shoes with heels be worn on snowshoes. Should this become an absolute necessity, on some short trip, the filler should be protected with an apron of leather extending from the toe hole back under the foot.

It is very essential that the snowshoe be properly attached to the foot. When tied on, the heavy cross-thong just back of the toe hole should be held firmly underneath the ball of the foot and the whole shoe should swing therefrom. The balance of the snowshoe should be such, with the exception of the bear-paw, that the tail will always drag on the snow, however high the foot is raised.

The array of sandals and styles of binding is almost as varied as that of snowshoes. Nearly every snowshoe-maker and harness-maker in the snowshoe country has his own style of sandal, while nearly every section has a different method of tying

the thongs. Some of the sandals consist of a little slipper affair for the toe and a strap to go around the heel. Others are more of a harness style. The latter are usually preferable. Always beware of sandals made with rivets. They do not hold well in wet leather or rawhide. A very good sandal is the one known as the 'Dr. Banfield model.' It is quite generally used by the members of the Appalachian Mountain Club, which in itself is sufficient recommendation.

If the snowshoes are attached with thongs, properly tied, the wearer has the advantage, in the case of a bad fall, of being able to twist out either foot without reaching it with the hands; in fact, when the thongs are once properly adjusted to the foot, they should not be untied, but the foot twisted in or out whenever the snowshoe is removed or put on. The regular commercial thong is made of rawhide and is much given to stretching. Lamp-wicking is preferable. Buy it in lengths — two yards to the pair and three quarters of an inch wide.

The following method of tying the thong is given, not because it is new or even original with me, but because it is the best one I know of: Bring the thong around back of the heel and forward

along each side of the foot, passing the ends down through the post holes on either side and up through the toe hole. Make a double loop over the toe by passing each end up, over, and down through the post hole on the other side. Again bring the ends up through the toe hole, and half-hitch around the double toe loop on each side of the foot. Then cross them over the instep, half-hitch to the heel loop on each side, and tie in a bow knot at the back of the heel.

Chapter IV

WANDERING ON THE WEBS

To the uninitiated, snowshoeing looks hard, but it is not. It is neither tiring to the muscles nor difficult to learn. Indeed, one will travel farther, and with less fatigue, on a pair of snowshoes than on the bare ground of summer. I proved this, to my own satisfaction at least, one winter in the White Mountains. We climbed Mount Lafayette on that trip, the Camera-Man and I. We left the Profile House about eight o'clock in the morning, snowshoed to timber-line, ice-crept to the very summit, and returned to the Profile by mid-afternoon — say three or four o'clock. The next summer we did the very same climb, starting about the same time in the morning, but it was nine o'clock at night before we got back down. Of course, we spent a couple of hours on the top of the mountain on the summer trip that were omitted in winter, on account of the intense cold; but even at that the winter trip was the shorter by a good two hours.

Some of this difference might be accounted for

by the difference in atmosphere — for the winter air certainly is sharp and invigorating — but that that was not the only reason is proved by our next experience on the same trip, which was a winter tour of the White Mountains.

Leaving Profile in the morning, we followed the railroad and highway to Twin Mountain. This was an eighteen-mile tramp and snowshoeing practically all the way, for neither the road nor the railroad was used in winter. We arrived just a little past noon, in fine trim, and after dinner proceeded to Bretton Woods, six miles farther on, following the railway track and beaten highway, and not snowshoeing at all. This seemed much more tiresome than the morning's tramp, but we attributed it largely to the fact that we had already done a good day's work. However, after a good night's rest, we followed the railroad down through Crawford Notch — tramping about twelve miles — and we were so nearly all in that we had to rest over for a day before proceeding, although at the time we tried to convince ourselves that we had stopped just to get my snowshoes refilled. And so I have invariably found it. If I tie on the snowshoes and start on a tramp that, in summer, would take all

CLIMBING A FENCE ON SNOWSHOES

day, I am sure to be back by mid-afternoon. You see, the snow covers all the inequalities in the going, and smooths up the rough places, so that one may pass unconcerned over the summer briar patch, brushy tangle, and treacherous swamp. The mesh of the shoe holds firmly on almost any snow, and there is no slipping. And the size and shape of the snowshoes themselves oblige one to take a long, swinging stride that rapidly eats up the distance with a minimum of exertion.

The snowshoe stride, while simple enough, is just a little different from the ordinary gait with which we parade up and down the concrete walks. It is somewhat similar to the woodsmen's well-known 'bent-knee' stride, which has such a prodigious appetite for trail miles. In ordinary walking the position of the body is quite erect, or even thrown backward a trifle, and the heel is only slightly raised from the ground. If this same step were used on the snowshoe, too great a heel pressure would be exerted and too much dragging of the tail of the snowshoe would result.

When snowshoeing, one should let the body incline slightly forward, then raise the heel of the foot first. The snowshoe has been attached to the

ball of the foot as indicated in the last chapter and swings therefrom. The whole leg is then lifted upward and thrown forward past the other shoe. The heel of the moccasin does not come down on the webbing until the snowshoe has been firmly planted at the end of each step. The summer tramper will instantly recognize the similarity between this and the 'bent-knee' stride, and as that has taken him over many a long mile of dirt and rock trail, so will the snowshoe stride take him across the drifted spaces and through the snowy woods.

Of course, snowshoes, by their very size, are awkward things on the feet of the rank novice. He must accustom himself to them, and until he has done so he should keep his mind more or less closely on his step. Observe this and all will be well. A common error of the beginner is to stand with one shoe overlapping the other and then try to start off with the under shoe. Another thing is to get the right spread to the feet. The common tendency is to step high and wide — to swing each shoe out far enough to clear the side of its mate. Others allow the shoe to swing too close and the side of the shoe in the air strikes the ankle of the

other foot. The snowshoer 'interferes,' as the horseman would say. Neither method is correct. The right way is to swing the shoe out just enough to clear the ankle of the other foot, allowing it to pass over the wide part of the shoe on the snow.

Equally important is the length of the step. If too short, there will be danger of overlapping. When both shoes are on the snow, the rear and narrow part of one should be just opposite the widest part of its mate. And keep the toes straight ahead. This is a rule to be observed by all pedestrians, and is especially imperative in this case, for the snowshoe hangs from the toe, and if this be out of line, there is a tendency to twist the leg muscles. Observe all these things carefully and all will go well. There will be an occasional tumble, of course, before you get the knack of it and learn always to put your foot down on the top of branches and loops that would otherwise cause a trip-up. Then there are snags, just under the surface of the snow and out of sight, that are waiting to catch in the webbing and upset the equilibrium of the amateur. When turning, too, with the long, tailed shoes, the beginner is quite sure to allow the tail of the one to

swing on the other, and, as this was done unconsciously, to start off with the wrong foot.

The reverse transmission on snowshoes is not automatic in action. It takes time and patience to learn to flip them back, and even after you think you have learned, a safe rule is never to take the weight from the forward shoe until you are sure the other rests upon a firm foundation.

Snowshoeing is so simple and so easily learned that, in itself, it is hardly a sport. Snowshoeing is a means to an end — the adaptation of extra large feet to enable us to walk over the otherwise inaccessible surfaces of the snow. But when ordinary snowshoeing begins to grow tame and lacking in the spirit of adventure, there are plenty of stunts that you can try by way of variety — stunts that you should be able to execute properly before you can qualify as an expert.

You should be able to climb nimbly up one side of a six-strand barbed-wire fence and hop off on the other side, without landing on your head, tearing your clothes, or breaking a snowshoe. There is a quicker way to get over a board fence. Walk straight up to it, place one hand on the top rail and the other about halfway down on the other

VAULTING A FENCE ON SNOWSHOES

side. Then lean over as far as possible and throw the feet up, turning them in midair so that they will come down parallel with the fence on the other side. Then you should be able to walk on logs — not edging along inch by inch — but pigeon-toeing straight across. But don't try this first on a log that spans swift-running, ice-cold water, such as a wilderness river. Here I speak from experience.

When performing these various stunts, one should have the welfare of his snowshoes ever uppermost in his mind. Never subject them to unnecessary strain. While sliding down steep hills may be good enough fun, it is not good for the filler of the snowshoes. Jumping, too, places too great a strain on their whole construction, and likewise standing on them while they are suspended between objects two or three feet apart. Of course, a good pair will stand a certain amount of such abuse, but they are continually getting it negotiating the necessary conditions of the trail. If you want to slide and jump for sport — get a pair of ski.

It is easier to climb straight up any slope, where the webs will cling at all, than to slab across the side of it. If you doubt this, try a slabbing climb

and your uphill leg will contribute plenty of evidence in proof of my assertion.

When the snows of winter have covered the land to a depth of two feet or more, it is as though Nature had sealed up all the countryside under a covering of fleecy whiteness. To the ordinary tramper, all the familiar haunts are as effectively barred as though under lock and chain. Figuratively speaking, the snowshoe is the key to this lock. Literally, it is more. It is a master-key which opens the lid on a whole new world of outdoor pleasures. It enables us to penetrate the vastness of the snowy forests, and brings us in touch with Nature's charms at a time of year when we might otherwise be restricted to the beaten paths.

Of web-foot wanderings there are kinds and kinds. One may be out for pleasure or out for profit; may have some definite objective, or may have none. One may be out for half an hour in the moonlight, for an all-day tramp, or for a hunting or fishing trip. One may wander alone, or he may have up to a dozen or even fifty companions.

The evening snowshoe parties are good. There is a witchery about the great, round winter moon that cannot be denied. And a jolly party that

tramps two or three miles to a suitable place, builds up a good fire, boils a pot of coffee, toasts a few apples and marshmallows, and spends a happy hour with stories and laughter before snowshoeing back to town and home, is sure of a good time and a certain amount of exercise in the sharp winter air. These little outings interfere in no way with the daily work at home.

Better yet are the all-day trips. With lunch and a few simple cooking utensils in the pack, one may take quite a cruise. It is interesting to tramp along the old familiar trails of summer and note the changes. It is as though one were traversing a new country, so great is the transformation wrought by the great white blanket, but peeping out from under the three-foot mantle of snow is many an old familiar object. Countless tracks and trails form dainty traceries on the woodland carpet. Everything is glistening and sparkling in its coat of virgin snow. A little fire at noonday adds much to the cheeriness of the meal and leaves a warm spot in the memory of the day. There are several sports that can be handled successfully on one-day trips: rabbit-hunting, fox-hunting, ice-fishing, and mountain-climbing.

But for the very best in web-foot wanderings, go away back into the big North Woods where the snow lies upward of five feet deep. You can 'put-up' at some remote lumber camp; or maybe you know of some snug little cabin; and camping out in winter is entirely feasible. Located in such a place, your web-foot wanderings become the real thing. There are trails of all kinds to be studied and ciphered out and deer 'yards' to be explored. There may be a lake where you can fish for the finny denizens that lurk beneath its frozen surface. There may be a mountain to climb which will afford a splendid view of the snow-covered landscape. Or you may take a beagle along, for the big snowshoe rabbit is legitimate game all winter long and furnishes good sport. Or perhaps you choose just to wander about, 'seeking what ye may devour,' in the shape of chance acquaintance with shy and furtive wild creature of fur or feather.

Chapter V

SKI AND SKI-ING

THE ski, as we know it here in this country, is primarily an implement of sport. As such it holds a high place, but no higher than it deserves, for one may obtain more real physical benefit, along with a certain mental poise, and, at the same time, experience more thrills and keen exhilaration from the hours on the ski than from any other sport. But, while the ski holds such a prominent place in the world of sport, that is, by no means, its only field and probably not the true reason for its existence.

No one seems to know, definitely, who first used ski, or when. Their origin has been lost in the haze of ancient Scandinavian history, but it is quite probable that their inventor, whoever he was, designed them for the very same reason that the North American Indian designed the snowshoe — to facilitate travel over the snow-covered land. The historic man, by the very nature of his existence, did not have the need for sports that his highly civilized grandson has, nor had he become

addicted to the speed craze. Sport and speed are entirely the innovations of modern man, and, while the ski as a means of locomotion had been used in northern European countries from time immemorial, it was not until the seventies of the last century that ski-ing as a sport attracted any attention. And the ski of to-day, while most popular as a means of sport, are just as useful for utilitarian purposes as ever, and the person who gets the most out of his ski will utilize them in his travels over the snow-covered land as well as for sliding and jumping.

To the casual observer, a ski appears to be but a long slab of wood, perfectly flat on the bottom and upturned and pointed at the forward end. However, there are several specifications which are highly important and should be correct in every ski.

In the first place, the ski does not lie flat on the snow. Aside from the obvious up-curve at the front — which, by the way, should not be too abrupt, but gradual and graceful — the whole thing should arch upward in the middle to a height of about one inch off the snow. This gives them a spring. A long groove extends the entire length of

the ski on the bottom, to prevent side-slipping. On jumping ski, two grooves, and sometimes three, are used. Then, too, the width of the ski varies. Its widest point is just back of the forward curve. From here it narrows gradually to the foot-rest in the middle, at which point it is an inch narrower than at the front. Then it broadens out again so that it is very nearly as wide at the rear as at the front. It is this variation in the width of a ski that gives the wearer control over it and enables him to swing it either to the right or to the left at will.

Since ski-ing has become so popular and the manufacture and sale of ski quite an industry, they may be procured in almost any kind of wood. Spruce, pine, birch, maple, ash, and hickory are the woods commonly used, and, provided well-selected and straight-grained timber is chosen, any one of them will make serviceable ski. Something depends upon the use that is to be made of the ski.

I have known ski-ers, who used their ski for locomotion only, actually to prefer those made from soft wood, say Norway pine, the reason for this preference being that this wood has an alternation of hard and soft layers. By quartering this grain, one secures ski that will wear ridged on the bottom;

that is, the softer layers will wear away faster than the hard, and leave an evenly ridged bottom which prevents side-slipping. Under ordinary conditions, however, the smoother the bottom of the ski, the better it will slide and the more easily you can travel. And the groove in the bottom gives all the necessary lateral purchase. Soft wood ski are much less expensive than those of hard wood, and where they will answer one's purpose they represent a little saving. But it is seldom a good plan to economize on anything that is so vitally essential to the success of your holiday.

My own personal preference is for ski made of ash. This wood seems the most adaptable to the steaming and bending process and holds its shape well. Ash is also a combination of lightness, strength, and flexibility. Maple and hickory, too, make good ski, better ski, probably, for jumping than the ash, and they will wear longer, but I have always used my ski for long cross-country trips where every pound of weight is felt before night. In selecting a pair of ski, always look both of them over carefully to see that there are no knots and that the grain runs lengthwise. A knot will almost invariably indicate a point where a ski will eventu-

ally break, while if the grain runs to the edge it means that splinters will sooner or later wear up, or the ski may break off. I have become shy of ski that have been finished with a dark mahogany stain. Many a time this has been used to cover some defect in the material of which the ski were constructed.

A ski of correct length is one that reaches to the tips of your fingers when you stand with hand upraised and the ski stands on the floor beside you. Commercial ski come in lengths, graded by six-inch intervals, from five to nine feet, so that one should have no difficulty in securing a good fit.

Nearly as important as the selection of the ski is the choice of a boot to be worn with it and the proper binding for fastening it thereto. While I have traveled for many a mile on ski, hunted on them for half a day at a time, with a most simple fastening, consisting of only a leather toe band, and wearing a pair of leather-topped, rubber hunting-boots, I am frank in saying that this is not a suitable outfit, nor one with which one can get the most out of the sport. As a means of travel one will get along, running some hills and negotiating easy turns. But if one expects to do any jumping,

or execute good Christiania swings or Telemark turns, one must have an outfit that will give absolute lateral control. This means the necessity for toe irons, and toe irons are not effective with rubbers or moccasins of any kind. So you must have a good heavy boot, with a stiff sole.

The binding that affords the greatest amount of lateral control is the Ellefsen. With these, in addition to the toe irons and straps which hold the toe of the boot firmly in position, there is a wide strip of belting which is permanently fastened to the ski and attaches to the boot by means of a heel iron and strap. While this rig affords the best lateral control, it does not seem to be as popular even among expert ski-ers, as the Huitfeldt model, which is put out by several different manufacturers, under as many different names. This model consists of a set of toe irons, similar to those used with the Ellefsen, and a strap which encircles the heel. This heel strap is fitted with a patent buckle by which it may be released with a single motion. With either of these bindings which rely upon the heel strap, it is essential that the boot be equipped with a concave heel, which keeps the strap from slipping off.

It is essential that the ski-ing boots be large-sized, so as to accommodate three pairs of stockings, and they must be kept well oiled. In fitting your boots to your ski, be sure that the toe does not go too far in under the toe strap. If it does, it will cause trouble should you fall forward. A good test for this is to kneel on the ski when all the straps are fastened. If you can bring both knees easily down so that each touches its ski, the binding is all right.

Another item on the ski-er's list of equipment is the pole or poles. My own opinion is that one should learn to ski without the use of any pole at all. There are two reasons for this. In the first place, I think the beginner should acquire the confidence that comes from relying upon one's self alone. The use of a pole destroys this by giving one a sense of possessing three legs. And, secondly, a pole is a dangerous thing in the hands of one who is not sufficiently familiar with ski to be immune from panic. In coasting a steep hill, the beginner is apt to try to check his speed by using the pole, and sometimes with disastrous results.

Just this last winter a case of this kind occurred at St. Johnsbury, Vermont. A lady from Massa-

chusetts was spending a winter vacation in the town, and while sliding down a steep slope on ski, she became frightened at her ever-increasing speed and sought to check it by sticking her ski pole into the snow in front of her. The point of the pole struck a rock and the lady came upon it with such force that it was driven through her clothing, and entirely through her body. This lady was taken at once to the hospital, and, thanks to the best surgical skill, she recovered and returned home, but not until the incident had left its impression upon amateur ski-ers of the locality.

Ski poles are all right — a great help if one knows how to use them, but, as I said before, don't start in with them or you will forever be dependent upon them. I have used ski for hunting more than anything else, where both hands must be free to handle the gun, and a pole would have been a handicap.

The proper use of poles does, however, aid progress over level ground, or uphill, quite a bit. As to whether one or two shall be used is a matter of personal preference. Most of the cross-country racers use two. These are just long enough to come up under the outstretched arm when the ski-er

stands erect. If only one pole is used, it should be longer — approximately the length of a ski, so that it may be grasped with both hands. When coasting, or running a hill, never carry the pole in front of you or use it as a balancing pole. Always allow it to trail from one hand. It is possible to use the single pole as a brake, with comparative safety, by leaning backward upon it and thus digging it into the snow. It is better, though, to slow down by stemming or using the snowplough and to stop with a Christiania or Telemark turn.

A tube of ski wax, with which to coat the bottom of the ski in the event of warming weather and softening snow, is a good thing to take along on an extensive ski trip, as is also an extra strap or two for repairing harness.

It has been said that one may learn to snowshoe in two hours and that it requires two years to become really proficient on the ski. There is a good deal of truth in this, though, of course, one does not have to put in two years practicing before he can have a good time. Indeed, ski-ing is so interesting and such a scientific sport that one may enjoy himself hugely while learning. Furthermore, it has so many branches that an entire volume would be

necessary to make it all clear, and only a brief outline may be attempted in this short chapter.

Some people seem to think that ski are made for sliding downhill only. They go to the top, slide down, take off the ski, and walk back up again. Such ski-ers have only half-learned the game. One should not only be able to climb any ordinary hill, but he should also be able to get over any obstruction that would likely be encountered in an ordinary day's travel. When I go out for a cross-country ski run, either by myself or with companions, I usually insist that one of the rules of the day be that the ski shall not be removed to get over any obstacle. To go around is legitimate. A long cross-country run over our New England hill country will bring a wide knowledge of ski-ing into play, and, provided one takes the hills as he comes to them and looks them over afterward, it is rather a sporty proposition.

Perhaps the reader would be interested in joining us, in imagination, on one of our cross-country runs. Starting in good season in the morning, we push out across the level fields just back of the village. This calls for the ordinary ski-ing glide, consisting of a series of pushes with the forward

ski, the body being inclined slightly forward, and bringing up the other ski into position before the first one comes to a stop. Up the first easy slopes of the hill the same method may be followed, but the glides will be noticeably shorter. As the grade becomes steeper, it is found necessary to raise the ski slightly from the snow at the end of each glide and then press it down firmly again. This settles it slightly beneath the surface and prevents it slipping back. The effectiveness of this is heightened if the points of the ski are turned slightly outward and the weight of the wearer thrown on the inside of his feet. The steeper the slope the more this is accentuated, the feet being spread well apart and the ski-er assuming a knock-kneed position. This step is called the 'fish-bone,' because of the track left in the snow. It is hard work, but it brings us rapidly to the top of the hill where we get a magnificent view of Old Sol as he climbs tardily over the main range of the White Mountains.

Along the top of the hill is a high board fence which at first appears insurmountable, but, following along for a little way, we find a place where the drifting winds have piled the snow so high that we may side-step over. Then down a slope on the

other side. At first this is gradual and the ski acquire momentum slowly. Then it falls away more abruptly and a few scattered rocks and scrub evergreens appear, with a persistent habit of always being just in the course, which keeps us swinging this way and that, as we wend around and between them. Then we bring up with a long dash out across the meadow at the foot.

Swinging back, up along the brook, we enter the woods for a little look at the tracks and trails of the wild creatures which are to be found there. This woods work is not within the ordinary scope of the ski, but it is practical, nevertheless. By keeping an eye ahead for open spaces, one may proceed through timber as easily on ski as on snowshoes. As we proceed up the brook, we find ourselves in a narrow valley, and in order to get out onto the hill again, it is necessary to resort to side-stepping. This method of climbing is just what its name indicates. One stands with both ski running parallel with the side of the hill and goes up exactly as he would go up stairs sideways.

Once up out of the woods, we are able to make the grade by a series of tacks, much as one would tack into the wind with a sailboat. This brings us

I HAVE ALWAYS USED MY SKI FOR LONG CROSS-COUNTRY HUNTING-TRIPS

AT NOON WE HUNT UP A SHELTERED, SUNNY SPOT AND BUILD A FIRE

to the top of another glorious hill, and down the other side we start. We have now traveled far enough from home so that the little details in the topography of the countryside are rather vague, and we are none too sure what obstacles may lie across the path ere we reach the foot of the hill. It is this uncertainty that lends zest to the thing. There may be nothing more than a few scattered rocks or trees, which may be easily avoided by taking serpentine curves around them, but there is the possibility of a six-strand barbed-wire fence clear across the hill. This would call for a quick turn and an abrupt stop. Or again, we might shoot suddenly out over a sheer ledge three or four feet high where it is a case of jump or take the consequences — and usually take the consequences in either case. It is only necessary to consider the speed of the coasting ski-er to realize that one must think quickly in such emergencies.

At noon we hunt up a sheltered, sunny spot, build a fire, boil a pot of coffee, and rest. Care has to be taken that the ski are not brought too close to the fire or the heat will cause the snow to stick to them when we start on. And thus we wander on throughout the afternoon — not seeking the course

of least resistance, but laboring to the top of many a hill for the fun of running down the other side. Then, at last, when the sun is drawing long shadows out across the snow, we top the last hill which slopes back down to the village. This side of the hill is already in the shadow. The snow is cooling off and becoming fast. Straight down we start, bearing outward with the tails of the ski and forming a snowplough to check the speed slightly until an old stone wall is passed, then settling low for a last breath-taking whiz which ends far out on the meadow. That night we may be conscious of a few muscles that we did not know we possessed, but we are also conscious of a new feeling of contentment and have something to remember for many a long day.

Expert ski-ers are able to make wonderfully fast time on these cross-country trips, especially when they are official races and the spirit of competition enters in. At Hanover, New Hampshire, during the carnival week in 1924, the best time for the seven-mile, intercollegiate, cross-country ski run was forty-five minutes. But perhaps the most wonderful race of this kind ever run in New England is the Mount Washington Marathon Ski Run. The

course starts at the Halfway House, on the Mount Washington carriage road, and leads to Berlin, New Hampshire, a distance of twenty-two miles. This race was first run in 1923, in conjunction with the Berlin midwinter carnival, and for a trophy offered by the 'Boston Post.' A high wind prevailed at the starting-point, and it was necessary for two men to hold each contestant until the starter gave the word. The slope and the wind both contributed to momentum, and the first quarter of a mile was made in ten seconds. It is downhill all the way to the Glen House, four miles, steep and winding, then a long run over country roads and across fields to the finish line. The best time was three hours and seven minutes. A similar race was run in 1924, over the same course, and for a trophy offered by Secretary of War John W. Weeks.

The most spectacular branch of ski-ing, perhaps, and certainly the one which attracts the most attention from those who do not participate, is the ski-jumping. While jumping may be practiced to a certain extent as an incident of the regular cross-country run, all the long-distance work has been done on specially constructed jumping hills. The start may be made either from the top of a steep

hill, or from a specially constructed wood or steel tower from which a long incline slopes down to the take-off. Below this the slope drops away even more rapidly. Starting from the top of the tower, the ski-er slides down the steep incline, taking on terrific momentum as he goes. Just before reaching the take-off, he crouches as low as possible, then, as he goes over, he springs upward with a motion known, in the parlance of the jump, as the 'staats,' and shoots out into the air. This takes him out over the steepest part of the hill, and before his ski have touched the snow again he has covered many feet from the take-off. Some of the photographs of ski-jumpers are a trifle misleading, and give those who have never witnessed a jump a wrong impression. In some of them it would appear that the jumper was a hundred feet or more up in the air. As a matter of fact, a ski-jumper is seldom more than eight or ten feet above the snow. His jump is parallel with the slope of the hill rather than high in the air.

The first ski-jumping of which we have any record was done at Christiania, in 1879, and the high figure set at that meet was seventy-six feet, the record made by one Torjus Hemmestvedt.

These figures stood until 1893, when Hemmestvedt came to America and smashed his own record by jumping one hundred and three feet at Red Wing, Minnesota. This record stood for five years, and then was broken by only six inches, with two men tied for the honor. The next year two more men tied on a record of one hundred and seven feet. After that records were broken with consistent regularity up till 1907, when Henry D. Hall jumped two hundred and three feet. This record stood until 1920, and then Anders Haugen cleared two hundred and fourteen feet. In 1921, Hall came back with the wonderful jump of two hundred and twenty-nine feet, on the jump at Revelstoke, British Columbia.

While I have been much interested in ski-jumping, it has been from a spectator's point of view only. From this standpoint, I am inclined to think that the height and angle of the jump, together with the condition of the snow, has much to do with the establishment of records. Hall came East and jumped in the National Tournament held at Brattleboro, Vermont, in 1924, and set a new record for eastern America, jumping one hundred and eighty feet. Judging from my observa-

tions of Mr. Hall, it would appear to me that the importance of the 'staats' has been rather overestimated. Hall did not seem to put the force into his spring that some of the jumpers do, but he left the take-off and passed through the air in exceptionally good form. Considering the natural laws of force and gravitation, it would appear that too great a spring at the take-off might break the force of the flight and tend to shorten the length of the jump. This, however, is but the musing of an idle spectator.

Fifteen years ago the ski was practically unknown in New England, and scarce all over the continent. To-day, it is more popular, judging from numbers, than either the snowshoe or the skate, and, indeed, I presume there are more ski in the country than snowshoes and skates combined. When I first took up ski-ing, about fourteen years ago, there was not a pair anywhere around that I could use as a pattern from which to make mine. To-day, I believe I should be safe in saying that ninety per cent of all the young people, say between the age of ten and twenty-five, in the town, have their ski.

The youth of our northern hill country, like the

youth of the Norwegian Peninsula, are growing up on ski. They do errands on them, play on them, go to school on them. It is no uncommon sight to see fifteen or twenty pairs standing about the door of a country schoolhouse. And beginning thus early in life, our next generation will acquire a skill on ski that we have never dreamed of. Even now, my boys of ten and a dozen years will, literally and figuratively, run rings around me on ski.

Chapter VI

COASTING AND TOBOGGANING

THE merest mention of 'coasting' is quite sure to touch a responsive chord in the heart of any one that grew up in the snow country. It might well be called the universal winter sport, for it is safe to say that no one was ever 'raised' in our Northern States, or Canada, where snow and ice cover the hills for nearly half the year, without acquiring a certain amount of coasting experience. A sled of some sort or description is just as much a part of every child's worldly goods as the very clothes it wears. And the child, with humble outfit and gentle slopes, gets just as much actual enjoyment from his sport as do his older brothers with more elaborate outfit and greater speed. Much depends upon the point of view.

A sled is so essential to a child's proper enjoyment of the winter season, and contributes so much to his physical health, that the providing of one suitable to the requirements becomes a solemn duty which devolves upon every parent. And not

THE MEREST MENTION OF COASTING IS QUITE SURE TO TOUCH A RESPONSIVE CHORD

only should a sled be provided, but also the time and place for its use.

Sleds of many kinds are offered for sale. Each has its own particular sphere of usefulness — was designed for certain conditions — and the choice of the right one is a subject for careful consideration. It is just as important that a child's sled be correct in type and construction as that your own snowshoes and ski are correct. Of course, a coasting sled should be strong and durable, and yet as light as is consistent with this strength and durability, but the most desirable feature is the ability to make speed and distance on the kind of coasting conditions which prevail where it is to be used. This is the supreme test; for the youthful mind values the sled just according to its ability to travel with those of his playmates. Unless you have good and sufficient reason for believing that a sled of different design will prove far superior, a safe rule is to buy for your child what the neighbor's children are using. Children have an almost uncanny faculty for knowing what is best, and, besides, if the sleds are alike, they will run in the same track and much greater speed and distance be realized than with a sled that is odd in size and design.

Where the coasting hill is smooth and the snow well packed across its entire surface, the flexible, steel-framed sleds, such as are now sold everywhere, are very good. These have a steering arm across the front end, and may be guided by the child's feet if he sits upright or by his hands when he lies flat.

But if the coasting must be done on the traveled highways, these sleds, whose width between runners is thirteen inches, are a little too wide to be practical. In the country, where sleds and sleighs are the only vehicles to be met in winter, these sleds are made just wide enough so that one runner follows each horse. And where only one horse is used, the shafts are set to one side so that the horse travels in front of the left runner. The roads trodden in this manner consist of two distinct snow paths, with a high ridge between. These paths are narrow, and the sled which runs best in them is not much over ten inches wide. Such were the conditions which prevailed in northern Vermont during my coasting days, and we found the ten-inch sleds by far the most speedy. A ten-inch sled must be low to the ground or it will tip over easily. Ours had three-inch solid wood runners and round,

spring-steel shoes. These shoes took on a good polish, and the little sleds were indeed fast.

The only method of steering these sleds was by dragging one foot. This was convenient enough, for we always chose to slide in the 'belly-bumping' style, as in this manner our bodies presented much less resistance to the air; but it certainly was hard on the rubbers. This objection might be overcome by wearing a toe-cap such as is sometimes used by those who steer toboggans.

When we grew a little older and felt the desire to enlarge upon our equipment, we would take two of these little sleds, fasten them together with an oscillating arrangement at the rear, a pivot bolt in front, and a board long enough to hold eight or ten people. The additional weight gave the thing much more momentum, and wonderful speed was realized.

We once had one of these traverse sleds which was especially constructed throughout for this very purpose, and was truly a wonder. It was made by a fellow some years older than I, one Bert Symes, was passed down through the younger members of his family, and finally came into my possession. Bert was a coaster himself, knew the conditions and

understood what the specifications of such a sled should be. Moreover, he had the mechanical skill to design and build it. It was the fastest thing I ever saw on runners. The individual 'bobs' were built along the same general lines as were our small sleds, had solid wood runners and round, spring-steel shoes, but they were a trifle shorter. The rocker was of wood and so constructed as to eliminate all side motion, and the sled always tracked. This is a vital point in the construction of a traverse sled, and one on which local blacksmiths who tried to copy our sled fell down. The 'hind' sled must follow exactly in the track of the front one or no great speed will be realized. The board, or seat, was equipped with folding footrests. It steered with cross-ropes, which gave very good control. These did not attach to the points of the runners, but some ten inches or a foot back of the points and directly under the front end of the board.

Across the front end of the board was a permanent footrest for the steerer, with a wooden peg near each end for the rope to pass around. From where the ropes attached to the runners they crossed diagonally upward and around these pegs, and the steerer wound his hands into them and so

grasped them as close down as possible. The short leverage secured by this hitch enabled us to bring the sled around short turns with comparative ease.

I believe that with that old double-bob sled I have attained a speed of the open road, or at least a sense of this, such as I have never realized otherwise. The best road conditions for coasting came just after a thaw, and the nearer all off the snow had gone, the better, so long as there were no bare spots. At times the whole road surface would be just one sheet of glare ice.

From my home, in a little Vermont hill village, it was possible to climb for a mile before the road pitched over on to the other slope of the hill. From this summit we could start our slide. For a distance the course led down through a woodland, winding about curves so tortuous that it required all the strength of the steering arm to bring the sled around, with much leaning on the part of the passengers to counteract the centrifugal force. Then we shot over a short bridge that spanned a tiny brook, up over a little rise, and down a straight, steep stretch to the upper end of the village. Here we rounded another curve and dropped down a series of pitches, gaining speed as we went, sped

across a flat, and made a square turn to the left. This was the most critical point on the whole course. Sufficient strength exerted on the ropes would bring the sled around and the proper leaning would preserve the balance, but you had to be sure of those two things. Even then it was hard to keep out of the ditch on the opposite side of the road, for the sled seemed to persist in a straight course, although it must go sidewise. It was always a feeling of relief — a sense of exaltation — that we experienced when we were safely around this turn, for many was the sled-load of humanity that came to grief in that ditch.

Just a few rods farther on, another square turn was made, this time to the right. But our speed was then diminished, and this one was comparatively easy. Then came the long, even slope of half a mile to the finish. How the small, round steel shoes would rattle over the ice as we sped down this last incline, and how the wind would cut our faces! I have watched the needle on the speedometer of a motor-car creep up to forty-five, fifty, fifty-five, and then touch sixty, but the wind didn't cut as it did on that old sled. Our course led down to the brook and across the bridge, and then our momen-

tum took us for quite a way up the opposite slope, making a continuous slide of a mile and a half, and fraught with thrills all the way.

Since those days I have examined bob-sleds and traverse sleds of many designs, all of them heavier and with a wider run, some with geared steering devices and equipped with cushions, but I have yet to see a sled that was so light and yet so strong, so speedy, and so well adapted to its environment as the one I have just described.

The only objection that might be raised against it was that it was designed to be used on main roads, and these roads were also used by the regular traffic of the town. Automobiles were not in existence in my coasting days, and even now automobiles are not plentiful on the winter roads, and sometimes are totally absent. Anyway, the automobile is not so great a menace to coasting children as might be supposed. Automobiles may be quickly brought to a stop when going uphill, but a horse is apt to become frightened and rear and plunge, possibly coming down on the sled or running right over the coaster. To meet and pass these horse-drawn sleighs on the sharp curves is more or less dangerous for all concerned. The wonder is that so

few accidents occur. Of course, the whole crowd on the sleds were always yelling and shouting, and this gave the drivers warning of their approach so that they might turn out. So long as horses did not become frightened, a safe passage was usually made.

The universal popularity of coasting, combined with the ever-growing craze for speed, has led to the adaptation of the toboggan for use in sliding downhill. The toboggan has already been referred to as one of the inventions of the North American Indian, but the white man is wholly responsible for its place in the field of sports. Like all the Indian inventions, the toboggan was admirably suited to the purpose for which it was intended; that is, the transportation of supplies over the lightly trodden trails of winter. In a later chapter we shall discuss the use of the toboggan as a help in the solution of the winter camper's transportation problem, but just now we are chiefly interested in its use for coasting.

While coasting on a toboggan may be practiced wherever there is snow on the hills, the greater part of it is done on specially constructed toboggan chutes. These are banked on either side to such a height that steering becomes unnecessary, and the

bottom of the chute is coated with smooth ice which adds considerable whiz to the downward flight of the craft. It is interesting to stand somewhere near the foot of one of these slides and listen to the variance of emotions which are recorded by those who have just enjoyed (or otherwise), the thrill of the whizzing ride. And it bespeaks the appeal of this form of sport.

Toboggan chutes have become quite numerous during the past few years, and a tour of inspection would reveal almost as many different kinds as there are different chutes. The more progressive resorts and hotels have added a chute to the list of attractions for winter visitors. Many country clubs and private estates have adopted them. Others are publicly owned by the larger municipalities. Many of these chutes are but tracks ploughed through the snow on some natural hill, but more often they start from a high sloping trestle. This has a platform at the top which, in some cases, may be tilted with a throw lever, which is in the hands of an official starter.

The artificial slope which leads down from the trestle should be quite acute, to give the toboggan a tremendous initial impetus before it shoots out on

to the natural slope of the hill. In some instances the toboggan chute will be carried across intervening valleys on bridges, or pass through tunnels, all of which lend variety to the thrilling ride. A toboggan slide not only takes one down the slope of the hill, but also well out on to the flat before the force of the flight is expended. In laying out one of these chutes, care must be exercised not to have it slope in a southerly direction, or it will be exposed to the direct rays of the noonday sun and soon become soft. To build a chute with curves is a thing that calls for considerable engineering skill, for these curves must be banked at just the proper angle or the flying toboggan will climb the trough or upset with the load. The topography of the hill and the surrounding country should be also carefully studied so as to get as long a slide as possible. Distance should not be sacrificed to secure steepness. Given a good start and a loaded toboggan will attain wonderful speed on more moderate grades. It is sometimes feasible to follow the contour of a ridge and thus get a long chute. There are some which afford a continuous slide of nearly half a mile.

The Canadians have been just a little ahead of us

in utilizing the toboggan for coasting and the sport has developed rather more in the Dominion than here. Some of their chutes consist of several tracks, side by side, separated by ridges of ice. The chute on Mount Royal, Montreal, has five tracks, and the one on Dufferin Terrace, Quebec, has three. This Dufferin Terrace slide is a most attractive one, for, as one whizzes along down the icy slope, he may gaze off across the mighty St. Lawrence River and over the lower part of the city.

If the toboggan is used for coasting on hills where there is no chute, the question of steering becomes quite a problem. Being perfectly flat on the bottom, the toboggan would naturally follow the course of least resistance and go down the steepest part of the hill, but sometimes obstructions present themselves and must be avoided. The only practical method of steering is for the rear passenger to sit sideways and drag one foot. The steerer usually wears a toe-cap, which not only saves his footwear, but also applies rather more friction on the snow.

A coasting toboggan is simplicity in itself — just a flat-bottomed sled, made of several strips of hard wood laid closely together and curved up-

ward at the front end and back over, forming a hood. The length varies from five to ten feet and depends upon the number of passengers it is to carry. Since its entire length lies flat on the snow, a toboggan may be wonderfully light considering the load it carries, and this is an item of considerable consequence when we remember that we must haul it to the top of the chute or hill every time we slide down.

There is one other branch of coasting yet to discuss — sliding on the crust. Late in the winter, when the sun comes out warm during the middle of the day, the snow melts and settles down. At night it freezes again, and each morning there is a hard crust all over the countryside. On this surface the sled or toboggan will take on remarkable speed, and we may go where we like, independent of trodden roads or specially constructed chutes. The lower stone walls are all buried beneath the winter's accumulation of snow, and even the highest of fences are so drifted in places that it is possible to pick a passage across. Here we get the real hills. The roads climb some, but they are supposed to follow, and do, the easiest course, avoiding the steeper pitches. This, too, is the more independent way of

coasting. We don't even have to follow a track, but, starting at the highest summit of the hill, we may steer hither and thither, wherever the contour appears inviting or an attractive slope leads away.

Chapter VII

SKATES AND SKATING

WHEN I was a boy, perhaps a dozen or fifteen years old, I had one possession that was the source of considerable pride to me and the envy of youthful companions. It was a pair of Winslow's ice skates with two pairs of blades, which were interchangeable. One pair was extremely long, for speed work on a straight-ahead course; the other was short and rocker-shaped, for quick turning and dodging. As I look back through the years at those skates, I find that much of their original glamour is lacking. My ideas, along with every one else's have undergone many changes in a score or more of years, especially as regards skates, and what appeared the embodiment of all that was desirable in those day is far out of style at the present time.

In the first place, those skates were of the old-fashioned, clamp-on style — the kind with an adjusting bolt between the heel and sole and a throw lever to lock them in place. This arrangement was most destructive to shoe leather and was never

very secure. Nor did the extra pair of blades prove as satisfactory as I had anticipated. The trouble was I usually found myself on the ice with the wrong set of blades. I loaned them one time and they were not returned, and I had but few regrets.

When one takes up skating for all that there is in it, he should give the selection of a proper outfit due consideration. The choice of a skate depends upon several things. Good material is essential, and it is not easy to tell good steel from poor steel, provided the latter is camouflaged with a good nickel-plating. One way, however, to differentiate is by the fact that good skates usually bear the name of their maker, which indicates that he is proud of his product, while the cheaper skates bear no name whatever. A catalogue from a certain mail-order house that I have at hand lists one grade of skates at ninety-five cents in the regular grade and at a dollar-seventy-five with Union tempered steel blades. Construction, too, is important, and the very best skates of the present time are set in a tubular steel frame. A long tube of steel supports the blade for practically its entire length, and to this are welded the uprights which support the foot plates.

While the old-style clamp skate is no longer upon the market, a screw-clamp style is quite generally used. These adjust with a key, and there is a separate clamp for both heel and ball. But if you would feel a perfect sense of security on your skates, you should have them permanently fastened to your boots. Really, you should buy the two together, which assures the right combination. But be sure that the boots are large enough to accommodate two or three pairs of stockings.

Of course, there are exceptions to all rules, and there are times when a good pair of clamp skates are more convenient than those which are permanently attached to the boots. For instance, if one were taking a cold-weather hiking trip, he might use ski on the snow and skates on the ice, but would hardly want to be burdened with an extra pair of boots in the packsack. Again, skates are fine for tending the lines when ice-fishing, but rather awkward when cutting the holes and setting the tip-ups, and those that may be removed at will are most convenient.

It is generally conceded that one can skate faster on a thin blade than on a thick one. A much thinner blade may be used on the hard surface of a

big northern lake or river than on the comparatively soft surface of an artificial indoor rink. So location figures in. Some experts, too, favor a tapering blade, say one having a thickness of a sixteenth of an inch at the front end and not much more than half of that at the rear. I am inclined to think that this is largely a matter of personal preference, for there are about as many devotees of the one as the other.

While the construction of the frame of a skate is important and the method of fastening them on equally so, it is to the length and curvature of the blades that the expert first looks in selecting his skate. For racing, or any speed work in a comparatively straight-ahead course, the longer the blades, within reason, the better, and the nearer flat. On the other hand, if your kind of skating calls for much turning and the cutting of short circles, such as fancy-figure skating, the blades should be but little longer than your own foot and their curvature quite pronounced.

Racing skates come with blades fourteen, fifteen, and sixteen inches long, and, at first glance, would appear to lie absolutely flat on the ice for nearly their entire length. The flattest of them do, how-

ever, have a slight curvature, or one could not guide them at all. Where the race-course is made up of several laps around a small artificial rink, the fourteen-inch blades prove more speedy than the longer ones, but out on the big lakes, where the course, however long, may be absolutely straight, the longer the blades the better.

These racing skates represent one extreme in skate construction; they are the longest and the fastest. The other extreme is found in the figure skate, the blade of which is but a trifle longer than the boot on the skater's foot. The curvature of the figure skate is quite abrupt for practically all of its length, and thus they may be brought around very short curves. Another essential feature of the skate that is used for figure work is the few saw-like teeth in the very point of the runner. These enable one to come to an abrupt stop at a given point or to reverse his direction, as in making figure threes.

We have now discussed the two extremes in skate design. Between these two one will find almost every conceivable shape; they range, by easy gradations, from the one to the other. It is, therefore, possible to secure a skate which will meet your requirements whatever they may be. What the

average person wants is a good all-round skate, and this is pretty nearly what a good hockey skate is. What the hockey players want is a skate on which they may make rapid progress down the rink when that is desirable, and at the same time they must be able to turn and dodge quickly. These things are just about what the average skater wants to do, although in a much more quiet and less spectacular manner. I noticed, while watching a hockey game at a winter carnival in Canada last winter, that some of the players' skates were notched at the point of the blades as our figure skates are, and this feature proved quite a help many a time. For instance, if one of the wing players suddenly observed the necessity for changing his position, he could, by digging these points into the ice, start off on the run, exactly as one would run without any skate at all, and thus get under good headway much more quickly than otherwise.

The most serious drawback to the sport of skating, as ordinarily practiced, is the uncertainty of the season. Of course, it is necessary to have cold weather to form the ice, and to make it hard and firm, and in sections where cold weather reigns, heavy snowfalls are not uncommon. Indeed, they

are liable to come even with the first ice, so that there is almost no skating whatever. Again, four or five weeks of snapping cold weather, coming before the first snows, will convert the whole system of northern waterways, lakes, ponds, and rivers, into a great open-air skating rink. It all depends upon the season.

In the more thickly populated centers it is entirely feasible to keep a certain area of ice scraped clean of snow. This may be either a natural or artificial rink. Or a covered rink may be constructed on which the snow never falls. This covering has other advantages in addition to keeping off the snow. It keeps the sun off the ice and insures a harder surface on mild days — this being especially advantageous in the more southerly localities.

Without doubt the skater who has easy access to these rinks has considerable advantage over those who have not. On the other hand, the skater who has never experienced the lure of the great open stretches of natural ice knows but half the joys of the steel blades. A skater whose experiences have been confined to artificial rinks is like a hunter who has never shot at anything except targets.

Of course, there is a very pleasant atmosphere of

ARTIFICIAL SKATING-RINK ON THE BERLIN CARNIVAL GROUNDS

companionship and jollity on the rinks. The beginner may learn much from observation of older skaters while those of more experience may get some incentive from the work of others. The spirit of competition, too, enters in and spurs one to better work. But it is not until one has faced a stretch of glittering river which beckons one down its length, or stretched his legs on a far-flung lake, that he senses the real stimulus of ice skating.

Equipped with a packsack and a light lunch, one may cruise on skates much as he would cruise on snowshoe or ski, or even on the bare ground of summer, only with much greater facility, for the skates give additional speed and make much more distance possible.

As good fun as can be found anywhere is ice-fishing on skates. Of course, one should chop the holes and set the lines, perhaps eight or ten of them, before putting on the skates, then he can glide about and tend the tip-ups with wonderful speed and facility, and if there comes a lull in the fishing, he may cut a few fancy figures around and between them to take up the time.

Chapter VIII

THE THRILLING GAME OF ICE HOCKEY

THE first time one witnesses a real game of ice hockey, it appears to be but a wild scramble on skates, to the tune of swinging clubs and skimming puck. As a matter of fact there is no more scientific or intelligent game than hockey. It is the speed of the thing that makes it confusing to the spectator, especially if he has failed to get a good, clear conception of what the game is all about or how it is played. Since this chapter is written from a spectator's standpoint, and for spectators rather than for those who know and play the game, we shall go into some detail as regards conditions and equipment.

A hockey rink is a rectangular field of ice enclosed within a tight board wall at least two feet high. This must be at least one hundred and twelve feet long by fifty-eight feet wide. It may be larger, but never smaller, as these figures are the minimum. Close to each end of this rink are the goal nets which are hung between two upright posts four feet high and six feet apart.

The Thrilling Game of Ice Hockey

A hockey team consists of either six or seven players, the number depending upon local custom more than anything else, and the game being prac-

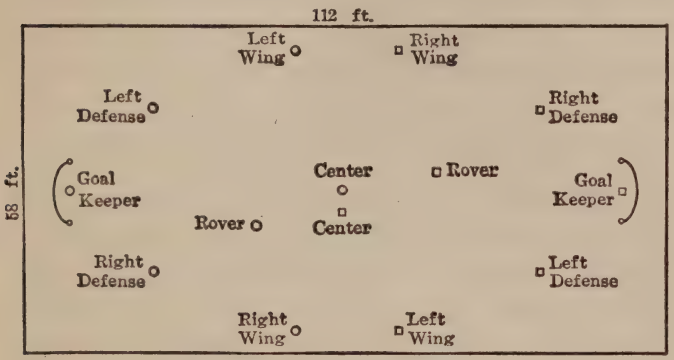


DIAGRAM OF HOCKEY GAME, SHOWING POSITION OF PLAYERS AT THE START
The Men of One Team are Indicated by Circles and Those of the Other by Squares.

tically the same in either case. The seven-man team is placed on the rink in the following positions: goal keeper; right defense; left defense; rover; right wing; left wing, and center. The accompanying diagram will indicate the proper place for each man at the beginning of the game. The goal keeper and the two defense men play on guard while the other four comprise the aggressive part of the team. Each player, of course, wears skates and

is provided with a hockey stick or club. These sticks are not all alike. The choice of a stick depends partly upon the height and build of the individual player and partly upon his playing position. The shaft, or handle, of the average stick is rather under four feet in length, with a blade from ten to twelve inches long and about two inches wide. The maximum blade permissible under the present hockey rules is thirteen inches long and three inches wide. These big clubs are used only by the goal keepers, being too heavy for any other position. The goal keepers are pretty well padded on the legs and body, but the other players like more freedom of movement, and many have no other protection than hockey gloves, with possibly a shin and knee protector.

The game is played with a rubber disk, three inches in diameter and one inch thick, called the 'puck,' and the object is to get this between the goal posts and into the opponent's net.

With all the players in position, the two centers skate to the middle of the rink, the referee drops the puck between their sticks, and the game is on. There is a short tussle between the two centers for first possession of the puck, but soon it shoots out

Photograph by Guy L. Shorey

A HOCKEY-GAME AT THE BERLIN CARNIVAL

where some other player takes it, and then one must be quick to follow it, even with the eye, as it whizzes hither and yon across the ice and through the air.

In this country the game is played during either two or three twenty-minute periods. In Canada a game consists of three twenty-five-minute periods. During these periods the puck is seldom still for an instant, unless a foul has been called. The players, with the exception of the two goal keepers, are constantly on the move, dashing and dodging hither and yon in the mad effort to keep the puck away from the players of the opposing team and to drive it into their opponents' goal net. Only the stick may be used in advancing the puck. It cannot be picked up, thrown with the hands, or kicked with a skate, but may be pushed with the stick or struck with it in such a manner as either to slide it along the ice or to lift it therefrom and skim it through the air. The most effective method, usually, is to push it along. In such case the player does not let it get out of his reach, and when he perceives that further progress is likely to be barred by the players of an opposing team, he may shoot it quickly to one side where a team-mate is waiting to drive it

toward the goal. But when good teams are playing, practically every inch of the ice is covered and goals are infrequent.

The goal keeper's position is directly in front of the net and almost between the goal posts, and it is rarely that he may leave this spot. He gets but little opportunity for the dashing, thrilling, spectacular work that is the lot of the other players, but his position is probably as important as any on the rink. In an average game the goal keeper defeats more goals than all his team-mates combined.

Good goal keepers are by no means plentiful. The work calls for a man with an unusual kind of disposition or temperament. He must be absolutely cool and stand motionless for minutes at a time when all about him is the most intense excitement. He must refuse to be drawn out, for hockey, like all other games, has its tricks, and could the goal keeper be beguiled away from his post, it would leave the net open to long-range shots from the opposing team. And, while the goal keeper may remain practically motionless for much of the time, he must be right on his nerve all the time and ready to move with lightning-like rapidity whenever the puck starts whizzing in his direction. His work is

to block this rubber disk, and he may do it in any way possible — with his stick, his skates, his hands, his legs, or his body. With a good goal keeper in front of the opponents' net, it is futile for any player to attempt a long goal shot. Fast as the puck travels, either on the ice or through the air, it does not go so fast but that a good goal keeper will block it if he can see it coming for a few yards. It is the short drives that are hard to intercept — those started almost within a stick's length of the goal posts. For this reason the goal keeper usually stands with his feet placed as though he habitually toed-out. Thus, with a single motion of one foot he can cover about half of his net. The hardest shot, perhaps, for a goal keeper to block is the rebound shot, and to appreciate this we must follow a little team-play up across the rink.

We will suppose that the center of one team has secured possession of the puck well down toward the other end of the rink and starts up across a comparatively clear field of ice. When about halfway up, his spectacular rush is blocked by the center of the opposing team, and the puck is shot across to the left wing, who, in turn, passes it quickly across to the right wing. From his position

a goal shot appears comparatively easy. The puck glides true, only to be easily blocked by the goal keeper, who starts it back down the ice. But, meanwhile, the rover has skated up to a strategic position within a few feet of the goal, and meets the puck with the rebound shot which gets by the goal keeper before he has had time to recover his equilibrium, and a goal is scored.

Like the goal keepers, the two defense men are guard players, but not so much depends upon their keeping to a given spot. Indeed, at times one or the other of these men is given the opportunity of taking the offensive and advancing the puck toward the enemy's goal, but their main mission in the game is to prevent the enemy from scoring goals. When one of these defense men does leave his position, it is a judicious move for one of the other players to drop back into the position so vacated, and this is an indication of good team-work.

The hockey players who come in for the lion's share of cheering from the spectators' seats are the center, the two wings, and the rover. They make up the aggressive part of the team, and their part in the game is to rush the puck toward the other end of the rink and into the goal net if possible.

These four men must be fast on skates, accurate in shooting the puck, and possessed of endurance and lung power, for they are constantly on the move.

First of all they must be expert skaters, capable of making rapid progress when a clear field is available, proficient in the art of turning and dodging, be able to come to a full stop within a few inches even when going at full speed, and, last, but as important as any one thing so far as their own safety is concerned, able to retain their equilibrium in spite of contact with other players and the interference of their clubs. They must acquire the habit of carrying the puck without keeping their eyes on it. They should be capable of quick thinking, have the ability to keep the position of nearly all the players constantly in mind, and thus know just when and where to pass the puck. This last is extremely important, for hockey is so fast, and the psychological second so sandwiched in between other rapidly passing seconds, that any delay whatever means a distinct loss of advantage. It is also essential that these offensive players be strong and have plenty of endurance and lung power, for, unless the referee calls a foul or an error, there is absolutely no let-up during an entire period of twenty

or twenty-five minutes. In this connection it might be stated that the big teams playing in the States recently played games of three fifteen-minute periods. Hockey rules are hardly so firmly established as yet as are the rules for some other games. In some places the various positions are designated by different names from those in others. The right and left defense are often referred to as 'point' and 'cover point.'

Hockey teams, too, may consist of either six or seven men. Our diagram shows a seven-man team. The six-man team is identical, with the exception that the rover is lacking, and whether he is there or not does not materially affect the line-up of the others. The position of rover is an advantageous one for an especially brilliant player. The rover is the 'free-lance' of the rink, and may work wherever he sees an opening. His presence, however, does take some of the work and some of the responsibility from the other players and encourages more listless playing on their part. On the whole, I think a game played with six-man teams is the more interesting of the two.

At Quebec City, during the Carnival week in 1923–24, I watched the lumbermen's teams, from

the North Shore and the South Shore, respectively, of the St. Lawrence, play for the Price Brothers trophy. Here were teams made up of the cream of Canada's young manhood, adept on skates and thoroughly familiar with the game. The periods were of twenty-five minutes' duration with ten-minute intermissions. About the middle of the last period, the score was tied, and there ensued the fastest and most furious struggle I have ever witnessed in any game.

Thus far, hockey appears to have been kept fully as clean as any of the games — that is, there seems to be a noticeable absence of foul and unfair playing. Of course, there are times, in the heat and excitement of the play, when a man will be accidentally tripped by another player's stick, and this cannot well be avoided. Intentional plays of this kind, however, should never be countenanced, for the game is so fast that tumbles are likely to be serious. The rules governing unnecessary roughness are quite strict, and unfair plays that are detected are heavily penalized by a sentence to the 'bull-pen.'

Hockey has seemed to make a long stride in the field of importance in late years, and is attracting

more popular interest than ever before. Plans are well under way for the establishment of an eight-club hockey league, comprised of four American and four Canadian teams.

Chapter IX

PUTTING CURLING ON THE CURRICULUM

'So lang as winter brings us cauld,
And hauds the ice togither,
The brawny curler will aye receive
A welcome frae a brither.'

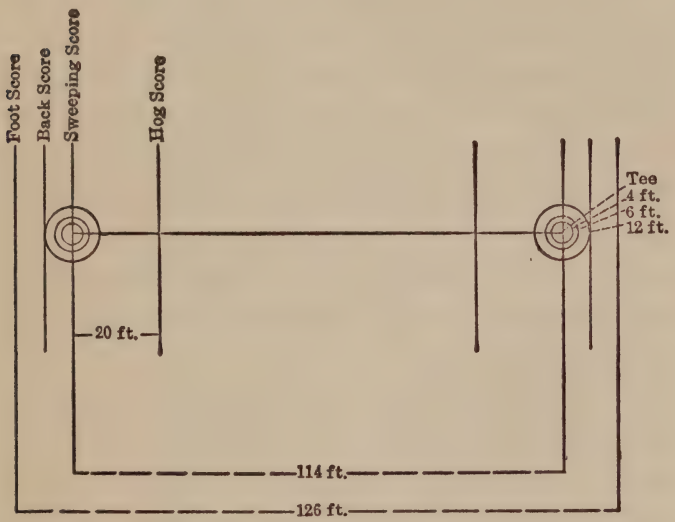
THESE lines, which were spread, in bold type, across one end of the Victoria Curling Club's rink, at Quebec City, served as my introduction to the game and at once acquainted me with two of its outstanding features. In the first place, the broad Scotch which is in evidence in the little verse, and ever noticeable among the players, bespeaks the origin of the game. For five hundred years curling has been a favorite winter pastime in Scotland, while the descendants of those Island Scots brought the game to Canada with them, and it has been enthusiastically followed for the better part of a century in the Dominion. While there are a few curling centers in the United States, usually where a group of Scotchmen have gathered together, the game is not so popular here as might be expected — probably due to the fact that it is so little known.

The other feature to which I refer is the welcome. When we stepped within the clubroom of this Victoria rink, a gentleman met us with outstretched hand, and inquired if we were interested in the game. Then he explained that a lap of the competition for the Holt, Renfrew Cup, in the Quebec Curling Bonspiel, was then being played off, and asked us out to witness the contest. There was a spirit of good-fellowship about the entire thing that warms one to the game. Those curling fans fairly radiated hospitality, and, as I later learned, this is a characteristic of the game wherever played.

A curling rink, or 'ice,' as it is more commonly called, must be one hundred and twenty-six feet long, but need not be wide — from sixteen to twenty feet being sufficient. Upon the surface of this ice it is necessary to lay certain lines, about which the game is played. These may either be scratched into the surface with some sharp instrument or painted thereon with some warm fluid which sinks slightly into the surface.

The first mark to be made is a straight line one hundred and fourteen feet long, which extends nearly the entire length of the rink. Across each end of this long line is laid a cross-line at right

angles, which forms a tee at either end of the ice. Taking the center of these tees, or the point where the long line joins the shorter ones, as a common center, are marked out three concentric circles, having diameters of four, six, and twelve feet respectively. (These figures are from Canadian rules, the Americans using circles of five, eight, and



PLAN OF CURLING RINK

fourteen feet.) Then several cross-lines are marked, spaced at intervals the entire length of the ice. The first is across the very end of the prescribed area,

and should be exactly twelve feet from the center of the tee. This is known as the 'foot score.' The next one should just touch the rim of the outer circle, and is known as the 'back score.' The sweeping score line has already been laid and forms the head of the tee. About twenty feet forward from this line is another known as the 'hog score.' This completes the marking of one end with the exception of a 'hack' or a 'crampit.' A hack is simply a foothold cut in the ice, while a crampit is a wooden or iron plate which serves the same purpose. The other end is then marked off in the same way, for the game is played in 'heads,' or rounds, back and forth, in alternation from one tee to the other; but, before discussing the methods of playing, let us look over the equipment with which this playing is done.

Each player has two granites, or irons, as the case may be. The granites weigh about thirty-five pounds each, and the irons sixty pounds each. A curling iron looks almost exactly like a small tin tea kettle, with the bail missing and the snout bent sharply back over the top, thus forming a handle. The granites are slightly larger, of the same general shape, but with rounded edges, more graceful

lines, and altogether a more finished appearance. As I understand it, the granites are the more satisfactory where the climate borders on the mild — exceedingly hard ice being necessary for spinning the irons. The initial cost of these granites is considerable, and would make the game appear an expensive one to play, but when it is considered that the stones are practically indestructible and never wear out, and that two of them constitute the playing equipment, with the exception of a common, ordinary house broom, the cost is not prohibitive.

A curling team is composed of four men, and when two opposing teams are playing off a match, it means that there are eight men on the ice and sixteen stones to be curled down the length of the course during each round, or 'head.' Each team chooses a captain, commonly called the 'skip,' who directs, in a measure, the plays of the other men.

When everything is in readiness, the skip of the first team steps up to the hack, and, with a long graceful, swinging motion, sends his stone down the ice in the direction of the tee at the farther end, giving it just the right twist with his wrist as it leaves his hand to impart the curling motion which

guides it whither he wishes. The ice covered by the three concentric circles is known as the 'house,' and the nearer the center of this one finds his stone at the finish of the head, the higher his score will be. This does not necessarily mean that the first stone should stop exactly on the tee. Indeed, a stone so placed early in the head would be quite sure to be jolted out by a stone of one of the opposing players. So it is much better that the first stone be placed a little short of the tee, and used as a foundation for building up a head.

When the second play of the first skip has been made, the second skip steps into position, and, polishing his stone on the flat side of his broom, proceeds to get his opponent's stones out of position and his own in. After their own plays have been made, the skips take up positions at the other end of the ice, where they may oversee the building of the house and direct the plays of their team-mates. Meanwhile, other players have been stationed midway of the ice, brooms in hand, ready to use them at a command from the skips. These brooms are decidedly important items of equipment, and skill in their use is just as essential as skill in the actual curling. When a stone cast by one of your team-

mates shows premature signs of slowing down, the skip gives the word, and you get in front of it and sweep as energetically as possible.

This sweeping not only clears the ice of all small particles which would naturally obstruct the progress of the stone, but also creates a vacuum through which the stone glides much more easily than when confronted by the resistance of the air. It is surprising how this sweeping affects the progress of the stone. It actually seems to take on momentum as though the broom had the same power over it that a magnet has over metal. Indeed, there is danger of overdoing the sweeping and imparting so much speed to the stone that it passes clear over the back-score line and is 'dead' so far as that head is concerned.

Speaking of dead stones: one which fails to reach the hog-score line is also counted dead, and must be removed from the ice before another play is made. A stone which comes to a stop between the hog-score and the edge of the outer circle, while not in the count in that position, may be left where it stops and possibly be driven in by a subsequent play. When a stone crosses the sweeping-score line, it is the privilege of the opposing players to

sweep in front of it, and thus try to draw it on over the back score and beyond the possibility of a count.

As the head increases in size, the problem of placing the stones increases accordingly, and calls for considerable figuring on the part of the skips. To build up a head successfully and hold it against a strong opposing team requires good generalship on the part of the skip and accurate shooting on the part of his team-mates.

When a skip has decided just where he wishes a player to locate the next stone, he often places his broom on the spot in such a way that the player may establish an imaginary line from his position to the desired goal. The skip also shouts verbal directions, and until one has become somewhat accustomed to the game, he feels the need of a glossary of curling terms. 'Inwick' and 'outwick' are two of these terms which have to do with the manner of playing the stones. An 'inwick' is a play which is so made that the traveling stone strikes on the inner side of another stone, say in a seemingly impenetrable barricade, and not only dislodges it, but also moves an opponent's stone which lies nearer to the tee, and then stops in the

coveted position. The 'outwick' is played on a stone of your own team — strikes on the outer edge of it and forces it nearer to the center of the house.

When a head has been played, the count is taken. This is a simple process, usually. The stone nearest the center counts one point for the team to which it belongs, and, if the next closest stone belongs to the same team, it adds one more point to the score, and so on until a stone of the opponents is found in the next respective position. This eliminates all further counts, and the score is recorded as per the last point, and a new head started.

While curling is a game of skill and science, rather than one of speed and strength, it is not altogether child's play. It takes some muscle to slide a sixty-pound weight for more than a hundred feet down the ice and land it where you will. I was watching a curling match in Quebec in 1924 with a friend from the States who had never seen curling before. We had just been viewing a thrilling hockey game, and my friend was inclined to think the curling rather tame.

'It doesn't take much speed or much strength either,' he said.

Then we walked along to where some stones and irons lay on the platform. I stooped and picked up a granite and my friend happened to get hold of an iron, and from that moment he watched those curlers with a new respect for their strength. The iron weighed sixty pounds, and my friend had to get a new hold on the handle and re-place his feet before he picked it up. And he didn't propose to demonstrate his ability to slide it down a hundred and twenty feet of ice.

Of course, a curler does not need the snap and speed of some other athletes, but he must have a certain amount of brawn and a great amount of skill and accuracy which is quite as hard to acquire. Curling may lack the dash of hockey, and the players may not be quite so picturesque as those which are clad in brilliant-hued tights, but there is a keen interest in the game, and the players are just as appealing in their neat and dignified business suits.

It may not appeal, moreover, to the fire of youth as do some other games, but it is a sport ideal for the more sedate and dignified middlemanhood.

Chapter X

THE WINTER CARNIVAL

THE annual county fair is no longer the leading outdoor event on the calendar of the North Country, nor is the community picnic the foremost social gathering. Both of these have been superseded by the winter carnival, which outdoes them, both in attendance and in the extent of popular interest. The automobile has been a contributing cause for this. With the advent of this popular means of locomotion we have literally gone travel crazy. So long as warm weather is with us and good roads stretch invitingly away, our principal aim in vacations seems to be to go as far and as fast as we can. When the snows of winter put an end to this, there comes a reaction, and we feel the urge of companionship, the desire to gather with friends for a social time, and to indulge in sports which call for muscular power rather than motor power. And the winter carnival furnishes all of these. Then, too, the winter sports have been rap-

idly gaining the favor of athletes of the past few years so that each and every branch now has many experts. Popular interest in these sports has created a demand for public exhibitions, contests, and competitions, and these furnish the real object of the carnivals. No two carnivals are exactly alike. Some excel in one thing and some in another, depending upon available talent and natural advantages. Each one usually features the leading sport of the immediate locality. The well-ordered winter carnival also affords the experts in the field of winter sports the opportunity of meeting and competing with the best in their given line, while to the average winter vacationist it offers the opportunity of witnessing all of these sports in their best form, and usually presents the opportunity for participating in such as may be desirable, as tobogganing, coasting, skating, etc. In short, it furnishes three or four days of as good fun as can be had in a whole year.

The winter carnival idea originated, so far as New England is concerned anyway, with the Dartmouth College students. These students, realizing the possibilities which presented themselves with the coming of the snow and ice each winter, or-

ganized, in the winter of 1909–10 under the leadership of Fred H. Harris, the Dartmouth Outing Club. This club, unique among educational institutions, has proved a wonderful success, and, while its activities have by no means been confined to cold weather, it has demonstrated the fact that a northern winter is a real asset to a college like Dartmouth. So rapidly did its members progress with their winter sports that it was decided, in the second year of its existence, to hold a winter carnival with contests in all the different sports. From this beginning, in 1911, the Dartmouth Winter Carnival has continued to grow until it is now recognized as a leading event on the college calendar. Many fair guests are invited, brilliant outing costumes are the order, and the whole town is agog with a carnival spirit, while the Outing Club Ball and many other fraternity affairs lend a social aspect to the whole thing. An indication of the numbers that come from afar to witness these sports and participate in the festivities may be found in the fact that ten special trains pulled into the station on the night before the opening of the carnival in 1924. Families, friends, and relatives of the students come to help celebrate the occasion, and a

spirit of recreation prevails, to which is added the zest of the northern winter atmosphere.

To digress, at this point, from the carnival subject, it might be said that the activities of the Dartmouth Outing Club have by no means been confined to the college campus. Within a radius of a dozen miles of this campus are many points of interest, and one mission of the club has been the outlining of routes and building of trails to these points. Then, Hanover lies well up in the mountain country, and lower ranges lead off from the very town culminating in the higher peaks of the White Mountains. A part of the club's programme has been the construction of a trail from the college into the very heart of these mountains. For the first thirty miles or so this trail-making was pioneer work on the part of the students, but at Glencliff their trail linked up with the Appalachian Mountain Club paths, and as soon as the Dartmouth Club were able to care for it, the A.M.C. turned their Moosilauke trail over to them. A chain of cabins along this trail is another feature. These are located at easy marching intervals, so that a tramper may start out from Hanover and tramp to the White Mountains proper, and have a cabin to

sleep in each night. Excursions to the main peaks of the White Mountains have become fixed features of each winter's programme — the Presidential and Franconia Ranges being chief objectives. The ascent of Mount Washington on ski, which is done every February by a party of club members, is about as sporty a feat as may be had in the mountains of the East.

But to return to the carnivals. As might be expected, other northern colleges followed the lead of Dartmouth, and a course in ski-ing or snowshoeing soon became as important as any study on the curriculum, with the result that their contestants can demand recognition in any competition. So the Dartmouth Carnival has become an inter-collegiate meet, teams from the different educational institutions competing for the individual honors in each class, and the college scoring the most points during the meet being pronounced the winner of the carnival.

Being first in the field, and having some advantage in point of numbers, Dartmouth has up to date been able to hold its own in winter sports competition, its only real rival, when it comes to full carnival honors, being McGill College of Montreal.

Nor is this championship in the field of winter sports the only thing that Dartmouth students have won. The health that comes from the outdoor life in winter is perhaps of even greater importance. If a professor of some twenty years ago could step back into a classroom on some winter morning next winter, he would certainly think he had got into the wrong pew. Compared to the pale and overcoated assembly of those days, a present-day class would appear more like a bunch of lumberjacks. Clad in stag shirt, stag pants, woolen socks, and shoe-pacs or moccasins, with faces glowing red where the warm blood rushes up at the stimulation of the breath of Old Boreas, they present a picture of health and strength that is good to look upon.

But, while the carnival idea originated at Dartmouth, it was not long confined to that locality. People had but to be started to appreciate the value of winter sports, and ere long snowshoe clubs, ski clubs, and hockey clubs began springing up all over the snow country. Now nearly every town of sufficient size to support one has its winter carnival. Some of these, of course, are more successful than others. The success of a winter carnival depends upon several things: the size of the town, lo-

cation, natural advantages, community spirit, and the talent for exhibition work.

An extremely large city is not necessary in order to have a good carnival. Indeed, there are some disadvantages in a large place, for it is more difficult to center the attractions and to center the interest. For instance, I was at the carnival at Quebec City in 1924. Here was a city of sufficient size to finance a good carnival. It had a sled-dog club, two curling clubs, five snowshoe clubs, five hockey clubs, an abundance of snow, plenty of cold weather, and every other natural advantage. While there I saw the best dog-race, the best hockey game, and the best curling match that I have ever seen. But they were all scattered over a large city, and I came away with a sense of having spent half of my time in traveling from one thing to another.

Not long previous to my visit to Quebec, I had attended the carnival at Berlin, New Hampshire. This town has a population rather under twenty thousand, and it is possible to center all of the events on one ground, located at Paine's Hill, just north of the city. The big ski-jump and the toboggan chute were built upon a hill which stands

but a few rods back from the river. The dog-races finish, and the long-distance snowshoe and ski races start and finish, in the road at the foot of the hill. Right here, too, is an artificial rink on which the skating matches and hockey games are staged, while the natural river ice (right at hand) forms a speedway for trotting horses and open skating for those who do not enter the competitions. Between the skating rink and the road is a level field on which the woods contests, the ski and snowshoe dashes, the ski and snowshoe obstacle races, and the fire-building contests are held. From nine o'clock each morning until nearly dark, the whole grounds are a scene of excitement — something doing all the time, and often two or three events in progress at once. While it may not make any particular difference to the contestants, it is much better for the visiting spectator to have things so concentrated that he may see them all without traveling about too much.

Of course, the financial success of any carnival will depend upon the number of people who attend, and the town that is located where railroad facilities are good has some advantage. But the old saying about the inventor and the mouse trap

might also be applied to winter carnivals, and it is safe to say that if any town will stage a good show, and let the fact be known, the world will tread a snowshoe trail, if need be, to its gates.

More important than geographical location is the natural topography of the country. There should be hills for coasting and ski-ing and tobogganing, and ice for hockey and skating. There is usually no lack of these things in a mountain country, but in the Middle West it is different, and carnival grounds are not so easy to find. While ski-running is entirely feasible and thoroughly good sport in a flat country and races may be conducted there, there must be some kind of a hill for jumping. Calgary, Alberta, has no hills, so an enormous ski-jump was built up on the flat roof of the exposition building. The slide and approach were entirely above the roof, with the take-off just above one of the side walls, and the landing consisted of another trestle which leaned against the side of the building.

While a carnival, like any sort of enterprise, must have some definite head, it is the community spirit and the coöperation of the entire population that really put it over. At Quebec the 1924 carnival was under the auspices of the Eastern Inter-

national Dog-Sled Derby Club, and the dog-team race was the stellar attraction, but all the other outdoor clubs of the city coöperated in making the affair an enjoyable one. The business houses, too, contributed largely in the form of prize money and trophies and the whole city turned out for a magnificent parade. At Berlin, New Hampshire, it is the Nansen Ski Club that takes the helm, but the Chamber of Commerce and the Athletic Association also wield oars. At Brattleboro, Vermont, the Brattleboro Outing Club conducts the carnival, and, as this organization is affiliated with the National Ski Association, this branch of sport is featured — the 1924 carnival being the occasion of a national ski-jumping tournament.

In England they are referring to America as 'dollar land,' and it is a fact that we do measure the success of any undertaking in terms of dollars and cents. The successful carnival, according to such standards, is the one that makes money for the town that stages it: cash returns in the form of gate receipts for its direct sponsors and an increase of ordinary business for all the industries of the town. The towns which realize the greatest amount of financial benefit are those whose business men

are broad-minded enough to realize that reasonable profits and a large volume of business pay better than an extra dollar or two at the time. The spectator who visits a winter carnival and comes away with a feeling that he has been overcharged for everything is not likely to repeat the experience nor recommend that town to his friends. On the other hand, if merchants of a town are far-sighted enough to reduce their prices a trifle, they will find that a large outside trade has been stimulated, and if the hotels and restaurants will do likewise, the visitors will leave with a sense of having been well treated and a desire to return. By this I do not mean that it is necessary to give something for nothing. The visitor has no right to expect that. But the average vacationist is not altogether ignorant as to values, and, while he may be willing to give away considerable sums of money, he does not relish having it taken from him by force.

One likes to go, too, where he is made to feel at home, where people appear glad to see him. Snobbishness has no place at a carnival. If people get acquainted and talk and visit with each other, they are reasonably sure to enjoy themselves. At one of the carnivals in 1924 a gold-piece hunt was con-

ducted. Five five-dollar gold-pieces were placed in the hands of five persons who would be either on the main streets of the town or in some public building between the hours of five-thirty and seven-thirty, and the instructions to each were to give his gold-piece to the first person who definitely asked for it, provided that person wore a carnival ticket. Any holder of such a ticket could ask any one he met on the street, or in any store, for this gold-piece, and if he got it he had only to sign a receipt for it and it became his permanent possession. The object of the thing was to get people to stir around, to see the town, and to get acquainted with one another.

But the most interesting thing, of course, about any carnival is the programme. Ski-jumping, being the most spectacular of all the winter sports, is always a leading feature on the card. Ski-jumping has been described, in more or less detail, in the chapter on 'Ski and Ski-ing,' and need not be dwelt upon here. A unique attraction on the Berlin ski-jump last winter was a jumping clown. Rigged up in a regular clown uniform, this daring fellow, Eric Holt by name, not only kept the crowd roaring with laughter, but would also give them thrills

THE CARNIVAL GROUNDS AT BERLIN, N.H.

Skating-rink at extreme left; big tent where lumber-camp dinner was served; ski-jump in center; toboggan-chute on right; and level field for miscellaneous sports in foreground

A DOG-TEAM STARTING OUT AT THE QUEBEC RACE

when he jumped through a ring of fire, a blazing hoop, and through a paper wall which shut off his view of the landing below him.

The cross-country ski run also attracts much attention, although the spectators usually see only the start and finish of it. Ski obstacle races and ski barrel races are more fun. Then come the snowshoe events, not so spectacular, of course, but calling for a lot of endurance on the part of the contestants.

Another big drawing card, at every carnival where they have been put on, is the sled-dog race. There is something about these teams of Huskies — something of the spirit of the Northland — that appeals to the romantic vein in the make-up of every one. Berlin has put on a dog-race each year for four years, and in the 1924 race there were seven teams entered, an aggregation of about fifty dogs. A New England Dog Driving Club has been formed, with Arthur T. Walden as its first president, and dog-racing will probably be a feature at many of the Eastern carnivals in future winters.

As already mentioned, the sled-dog club at Quebec City had charge of the carnival in 1924, and staged a good race under very hard conditions.

Sixteen teams were entered — totaling more than one hundred dogs. Another dog-race is held annually at Ashton, Idaho, and, while it is comparatively short (only twenty-five miles), it draws crowds of people numbering nearly ten thousand. The real dog-race, however, is run at The Pas, Manitoba. This is a two-hundred-mile, non-stop race, and requires more stamina and endurance, both in man and dog, than any other such race that has ever been run. At the 1924 race a new record was established, by Shorty Russick, driving grade Russian wolfhounds. His time was twenty-three hours and forty-two minutes. A full carnival programme is presented with this race.

Dog-racing seems to be gaining in popularity everywhere. People of all times have been interested in dogs and in their competitions. Dog-driving as a sport, too, is destined to grow in public approval. This subject has been discussed more fully in the chapter on 'Trail Transportation.'

Wherever feasible, a woodsman's contest is decidedly interesting. For the individual chopping competition, green spruce sticks, thirty-five or forty feet long, are set upright, and a stake is driven in the ground about twenty-five feet from

the base of each. These logs are to be felled as near to the given stakes as possible and then cut in two in the middle. The prizes are awarded to the chopper making the best time, with an additional prize for the contestant who comes nearest to his stake. When this contest is arranged for two-men teams, the rules usually specify that the stick is to be felled with axes as near to the stake as possible, and then cut into four-foot bolts with a cross-cut saw, and all in the quickest possible time.

Another class in these woods-working contests is for team-driving and log-hauling. This contest is for two men to harness a pair of horses, hitch them to a logging-sled, load a load of green spruce logs, and haul one hundred yards in the shortest possible time. In the buck-sawing contest a quarter of a cord of pulp wood is sawed once in two.

At the Berlin Carnival these woodsmen's contests are usually featured, for Berlin is a pulp and paper mill town, and in the big wilderness which stretches away to the northward she has a great field from which to draw contestants for these events. But every one of those expert woodsmen who came in to participate in the 1924 events re-

ceived something of a jolt when one of the local police officers went in and practically cleaned up the honors. He not only felled his stick nearest to the stake, but he did it in two minutes and forty-eight seconds, which was a clean three minutes quicker than his closest competitor. When it came to buck-sawing, he cut up his quarter of a cord in six minutes and fifty-three seconds. It might be mentioned, in passing, as may be guessed, that this 'cop,' Alfred Landry by name, had been a woodsman, years before, in the wilds of Quebec. These woods contests are truly wonderful exhibitions of the strength and prowess of these men who work in the great woods.

Another feature which is always interesting, and which also serves to demonstrate the value of woodcraft, is the fire-lighting contests. These are usually for boys, say of Scout age, but sometimes classes for men are also added. The object is to build a fire and bring water to a boiling point in the quickest possible time. Each contestant is supplied with a block of dry wood, three matches, an axe, a tin kettle, a thermometer, and one quart of water. The wood must be split, shavings made, the fire lighted, and the water heated to a temperature of

two hundred and twelve degrees. Many a time one half the contestants will fail to get a blaze ere their matches have been used up. At the Berlin Carnival in 1924, in the boys' contest, the first bubbles were reported in just seven minutes.

The skating events at the carnivals, as elsewhere, are always spectacular, for there is so much speed and dash to the steel blades that they cannot fail to thrill the crowds. Hockey, likewise, is a leading feature, and curling, too, wherever there are local curlers and a curling ice. A game of baseball on skates also furnished a whole lot of fun.

In localities where fast horses are popular, they figure in the carnival sports. They are raced on the ice speedways, and they comprise an essential part of each ski-joring team. Altogether the winter carnival if properly conducted will furnish something of interest for every one, whatever his tastes may be.

Chapter XI

WINTER IN THE WILD WOODS

THE coming of winter, with its cold weather, its snow and ice, converts the whole countryside into a new and a strange land. The sports of winter are essentially different from the sports of summer. Even the modes and methods of travel are different. And, to one who has been accustomed to Nature only as she appears in summer dress, to summer sports and bare ground trails, these differences are sufficient to absorb his interest for a while. Wanderings in the fairyland, into which the summer woods have been converted by their camouflage of snow, satisfies an immediate longing for exploration, and the mastery of the snow sports and the art of locomotion on snowshoe and ski appeases, for the time being, the craving for adventure.

But there comes a day when the winter countryside is as familiar as that of summer. The newness wears off the snow sports. The snowshoe and the ski become more than mere pedal appendages, and, with familiarity, seem actually a part of our flesh

and bone. Each day finds us wandering farther and farther afield in search of new scenes and new adventures, until finally we find ourselves chafing under the restrictions which oblige us to return to a given point each night. It is then that the winter vacation idea grips one, and he experiences the desire to get back into the big woods where solitude reigns.

Now a vacation in the big woods of winter is just as enjoyable, just as feasible, and just as practical as a vacation in the big woods of summer. A person who has found pleasure on the near-home hills and in the convenient woods will find even more enjoyment on the mountains and in the extensive forests of the wilderness. Likewise, the man who has enjoyed a real big woods vacation in the warmer seasons will also find pleasure in his winter woods holiday.

The secret of success on any holiday in the woods lies in the ability to wrest the necessities and comforts of existence from such raw materials as may be available. Camp life is, therefore, a contest with conditions and elements, and, contrary to common ideas, this contest is no more uneven in winter than in summer. Intense cold is no more

disagreeable than oppressive heat, and is much more easily overcome. A snowstorm is not so bad as rain, and all the minor discomforts of winter taken together cannot compare with the flies and mosquitoes of summer. But, while the contest for comfort in the woods of winter is no more difficult than the same struggle with the summer elements, there is one point which should be constantly kept in mind. It is the fact that winter is the sterner of the two seasons, and absolutely relentless. If we fail in our contest with warm weather elements, we are aware of discomforts, we experience a sense of being beaten, and possibly suffer. If we fail to make good in the woods of winter, we shall — probably — die. The Frost King is not such a formidable foe, but he knows no mercy once he gets the upper hand. Competence and efficiency are sterling virtues in the woods of winter. So one should be always on his guard, and always ready to meet any emergency. And, while it is all right for any novice to venture into the summer woods on a camping expedition, the vacationist who ventures far into the snowy solitudes should be familiar with the fundamentals of woodcraft, enured to the cold, and provided with the right kind of equipment.

It is a good idea to break into this winter wild woods game gradually. Spend the first vacation at some sportsmen's camp. Many of these are now keeping open all winter to take advantage of the ever-increasing number of those who choose the cold season for their days afield. These camps are as comfortable as need be, and all one has to worry about is his personal comfort when out-of-doors.

If there are no public camps in the locality of your preference, try a lumber camp. While these may not provide the luxuries and conveniences, they are thoroughly comfortable, in a rougher way, and a sojourn therein is in itself an interesting experience. The life of the camp and the work of the lumbermen are always interesting, and we may branch out, on trials of our own, in quest of fish or game, or mountain-tops or pictures.

But we usually go into the big woods in search of solitude — to be alone and independent. If one has access to a good cabin, or summer cottage, in a remote locality, he may use it as headquarters on a camping expedition. Many of these cottages, however, being built for warm-weather use, are lightly constructed and apt to be drafty and cold. An abandoned lumber camp will furnish admirable

headquarters. The larger buildings of the camp are altogether too large and require too much fire for heating, but there is usually a smaller building, erected for the lumber company's office when the camp was in operation, that is just about right. This was built for year-round occupancy and its walls are thick and tight, although they may require just a little chinking between the logs to restore the original comfort. When one has become sufficiently familiar with the ways of the woods in winter, he may even try tent life. This also is entirely feasible, and one may be thoroughly comfortable, but this will be discussed at length in the next chapter. Anyway, a good tight cabin affords more comforts and conveniences than the best-ordered tents, and is, therefore, preferable for a protracted stay.

Winter woods are usually spoken of as bare and desolate places, but this depends somewhat upon the point of view. True it is that the verdant foliage of summer is lacking, but after each snowstorm all the branches and twigs on the trees are draped with festoons of pure whiteness, which, though different, are every bit as beautiful. The evergreens are always present and offer striking con-

trasts against the snow background, while the varying shadows and the different shades of grays and browns on the naked tree-trunks lead, in easy gradations, from the clean white of the snow to the darkest tints on pine or balsam.

Wild life, too, is considerably less abundant than in the summer months, for most of the birds have migrated and some of the animals are in hibernation, but such as are left are more interesting than they are during the summer. The birds may be observed and watched to much better advantage when the trees are bare of leaves, and one's heart can but go out to the cheerful little chickadees and their more sedate companions who brave the rigors of a northern winter while others of the feathered tribe are basking in the warmth of a southern sun. Furthermore, each time a wild creature ventures forth through the snow-covered woods, he writes a plain tale of his comings and goings which may be read by any one who will follow the trail.

So many and varied are the diversions afforded by the big woods in winter that the vacationist may follow the natural inclinations which lead him to the summer resorts. If he be a fisherman, he will find sport with the finny denizens which lurk be-

neath the icy surface of the near-by lakes. Ice-fishing, while not so scientific a sport as angling with rod and reel, is thoroughly good fun and results in some good catches.

Midwinter is, of course, close season on most of our game animals, but snowshoe rabbits are present in great numbers all over the North Woods country and furnish good hunting. They may be trailed and shot quite easily, but the best method of hunting them is with a beagle or hound of some kind. Red Fox, too, are more or less plentiful, depending upon the locality, and they may be followed on foot or run with hounds. Other fur-bearers, such as the mink and the marten and the fisher, will be occasionally met, but, being nocturnal in their habits, are not easily secured by hunting. The records which appear on the snow give one a new insight into the life and character of these wild animals, and often a clearer conception of which should be killed and which should not. For instance, a half-day's investigation of the trail of the weasel will convince any one that his depredations are sufficient to warrant his killing at any time.

The deer inhabit the woods of winter, but as

A PAIR OF MURDERERS EXECUTED

soon as the snow gets deep, they 'yard.' This deer yard is a thing which is generally misunderstood — a majority of people thinking of it as a place similar to a barnyard where all the deer of a certain locality are gathered together. On the contrary, a deer yard is simply a system of paths and trails which meander about through the best browsing in some sheltered and well-wooded tract. This yard may extend for a mile or more up and down some valley and lead off on to the hills on either side, and may contain hundreds of deer. They are so laid out that it is exceedingly difficult for one person alone to corner a deer in any one of them. Two or three men working together, on snowshoes, may sometimes do it, cornering them in a narrow path and forcing them out into untrodden snow, where they are quickly overtaken and photographed or handled.

The man who likes to pack home-and-cupboard upon his back and wander the paths of summer may do the same thing along the snowshoe trails of the cold season. It requires a trifle heavier outfit for the winter trip, but such an outfit is possible — one which will provide adequate protection, both on the trail and in camp, and still keep within the lim-

its of an ordinary man's strength. Such an outfit must be a combination of lightness and serviceability, for the load must be kept under forty pounds. For such trips I have an open-front lean-to tent which, when waterproofed by the paraffine process, weighs but a trifle over five pounds. If properly erected and heated by an open fire in front, this tent affords adequate protection and a pleasant and comfortable place to spend a long winter evening and get a good night's rest. The bedding problem is the most momentous one. It is next to impossible to carry enough ordinary blankets to keep one warm. Sleeping-bags, made of fur, will meet every requirement — being light enough to be readily carried and warm enough for any weather. Some of these bags will weigh under ten pounds. This makes fifteen pounds of tent and sleeping-bag, leaving twenty-five for food and utensils, which is sufficient, provided they are well chosen. Another thing — the mental equipment that one totes in his upper story is just as important as the material outfit that is packed on the back. But more about camping outfits in a subsequent chapter entitled 'Winter Woodcraft.'

Canoe cruising is a summer sport which cannot

be practiced in winter, but sledge cruising with a dog team may eventually prove just as good fun. Of course, cruising with a dog team, once one leaves the roads and beaten trails, means much more than riding and driving. So also does canoeing when one cruises a wild North Woods river. In such cases that sport develops into a continuous round of labor, with pole and paddle and track line. So with winter cruising — when one breaks into new country, the kind that is really worth exploring — dog driving becomes a stiff day's work, at the handle bars, on the gee-pole, or with the towline.

This chapter has been intended to introduce the reader to some of the winter sports in the big woods in winter. We shall try to become more thoroughly acquainted with each one of them in subsequent chapters.

Chapter XII

COLD-WEATHER CAMPING

THE best parts of our wild woods are those that lie far back from human habitations and are free from all works of man. The vacationist who visits these more remote regions must, perforce, camp out — establish a temporary home convenient to the scenes of his pastimes. There was a time when the snow and the cold weather presented an effective barrier across the trail of those who live in tents, but of recent years campers have learned that these very things — the snow and the cold weather — if properly utilized, actually contribute to the comfort of tent life, and that a very snug shelter can be evolved from the summer canvas even in the real winter woods.

My own camping experiences date back over a period of twenty years, and as, in memory, I journey over the back trail, many and varied are the scenes which flit before the mind's eye. During each of the four seasons I have lived in a tent. In every one of the twelve months I have pitched canvas in

the woods. Tent life is entirely feasible under any climatic conditions if one goes about it in the right way. One may go into the woods at any time of the year and live comfortably with no outfit or shelter other than that which he takes with him. Indeed, as I look backward, my thoughts linger longest and fondest on those camps in the dead of winter when the mercury huddled away down in the bottom of the tube and deep snow lay on all the land. This seems odd, and I am willing to admit that I gazed shiveringly askance at any winter camping project until my occupation forced most of the leisure out of my summer months and I was forced to take to the woods in winter or not at all.

The winter camps proved so much more successful than I had anticipated that I sought a reason, and finally arrived at this conclusion: any camp, to be a success, must afford comfort, convenience, and satisfaction. Now comfort is largely a relative term — a thing of comparison. A summer tent may be entirely comfortable so far as actual conditions go, but it does not make any special appeal when the star-studded sky offers such an attractive canopy. But when we consider the snug coziness of the well-ordered winter camp, with its soft balsam

beds, warm blankets, and cheery, crackling fire, in contrast with the cold of the outside woods, with the howling winds and driving snows, we experience a wonderful sense of security and appreciate the meaning of the word 'comfort.' As for convenience, the snow has smoothed up all the rough places, buried the snags and rocks and brier patches, and made it easy to get around. Then, too, the cold weather has turned the whole countryside into a great natural refrigerator for the preservation of camp foods so prone to spoil in warm weather, and has obliterated the hordes of flies and mosquitoes which swarm the summer camps. Comfortably situated in a conveniently arranged winter camp, one experiences considerable satisfaction in being thus able to cope with the sterner elements and wrest an existence from the cold and frozen heart of the forests.

So, after many years of camping under all kinds of conditions, I am firm in the belief that tent life in winter is just as practical and just as pleasureable as tent life in summer, though one must adapt one's self to the new conditions, which means a whole lot of new problems to be worked out.

The elements of Nature are things over which

man has no control, and the first lesson in camping is to learn to accept conditions as they are and so arrange the camp that these conditions will prove conducive to comfort rather than otherwise. In winter, therefore, the camper must accept the cold and the snow and try to make them contribute to the pleasure of the holiday.

I once sent some photographs of winter camps to the editor of an outdoor magazine, who returned them with a note saying that the tents did not look as though they would shed snow. 'Shed snow.' That was a new term to me, or, rather, a new application of the term, and I smiled as I laid the photographs away. Now a comparatively gentle slope will carry off the water from a summer shower, but if the roof of a tent be very many degrees out of the perpendicular the snows of winter will cling to it like the proverbial pup to a root, for the heat of the inside warms the canvas just enough to make the snow stick.

Anyhow, what is the advantage in having a tent that will shed snow unless it be for a temporary bivouac? The snow is Nature's own blanket, and the more of it you can get around and over your tent the warmer the interior will be. We must

always bear in mind, however, the fact that the weight of this snow will sag the canvas of the tent all out of shape and cramp the available inside space beyond all endurance unless we provide against it by reinforcing with a framework of poles. This reinforcement may be in the form of a rigid framework on the inside or an extra thatch roof on the outside.

One of the first and most important things to be considered, therefore, in the selection of a tent for winter camping, is its adaptability to this reinforcement. Personally, I have a leaning toward the thatch-roof method, and the theory back of my preference is this: the thatch roof soon collects an accumulation of snow, which makes it comparatively tight. The space between it and the roof of the tent then contains dead air, which ranks next to vacuum as a non-conductor, and forms an excellent insulation between the heat of the tent and the cold of the outside woods. It is exactly the same principle which we advocated in connection with cold-weather clothing in Chapter II of this book.

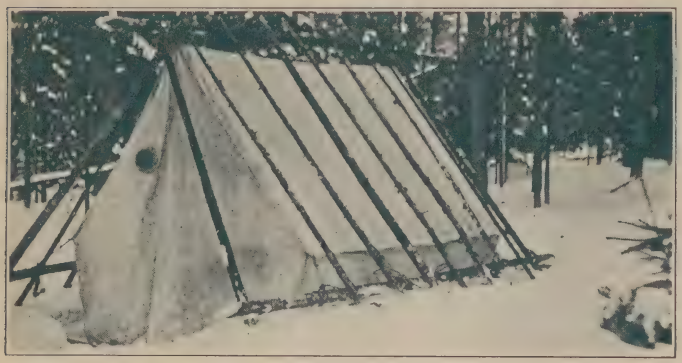
Your tent, too, should conform to your own particular methods of heating, whether that be by

camp stove or open fire. It should be easy of erection, which is not so simple as it sounds when the ground is covered with four or five feet of snow, and it should be as light in weight as is consistent with size and durability. In short, it should have all the regular summer talking points. The ordinary commercial tents, as commonly sold, are hardly suitable in all respects to the use of the winter camper. Tent-makers do not, as yet, cater to the winter trade, and if one gets a canvas lodge that combines all the best ideas of winter camp craft, he must either remodel a commercial tent or make one of his own design.

If one is breaking into the winter wild woods game by degrees, staying first at a sporting camp, next at a lumber camp, then at a log cabin, he will find the ordinary wall tent the best substitute for a cabin and the next step in the direction of a primitive existence. Of course, a wall tent is comparatively heavy and rather hard to erect in the snow, but it conforms more closely to our highly civilized ideas of shelter and convenience than does any other tent. If it be sufficiently large, it will permit the camp cots, camp stove, and even woods-made chairs and table. When properly erected, this

kind of a tent is nearly as comfortable as a log cabin.

A wall tent intended primarily for winter use should be equipped with tapes at intervals along the ridge so that it may be suspended from an outside ridgepole. This pole should be supported at either end by a pair of shears, and the legs of these shears should slant out parallel with the slope of the roof on each side. If the tent is not equipped with these tapes, one may cut a ridgepole which will just fit inside the tent, a rope or cord tied around each end, passed out through the post hole, and used to suspend the tent from an outside ridgepole as already mentioned. Horizontal poles should be placed upon these shear poles, one on each side and just below the eaves of the tent, and the guy ropes attached to them. The weight of these poles as they slide up and down on the shear poles will keep the roof always taut. Thus it will be seen that an outside framework of poles supports the whole tent. This not only obviates the necessity of driving stakes (an important consideration when the ground is frozen), but it also forms a good foundation on which to lay the auxiliary thatch roof. To put this on, we simply lay a few light poles from



MAKING THE WALL TENT SNOWPROOF

the ridgepole to the guy pole and shingle a thatch of evergreen boughs on top. When this thatch has accumulated sufficient snow to make it airtight, the tent will be even warmer than a log cabin.

The only practical method of heating this style of tent is by a camp stove, and it is obviously necessary to have the asbestos stovepipe ring in the end of the tent — otherwise it would interfere with the thatch roof.

The 'A' or 'wedge' tent may be pitched in this same way and makes a snug little camp, but lack of walls would make the inside space rather limited.

Where the saving of weight is a desirable object, the open-front shelter, known as the 'lean-to' or 'baker' tent, is a good one to cotton to, for this tent is light in itself, is heated by an open fire in front, and permits the elimination of the stove from the outfit, thereby further reducing weight. This tent embodies the principles of the well-known reflecting baker. A fire is built against a big rock, or back log, out in front. This throws the heat of the fire back on to the sloping roof of the tent which, in turn, reflects it downward upon the occupants of the interior.

My lean-to was home-made and unorthodox, no

doubt, if judged by the standards set by commercial tent-makers. In fact, it was because I could not find a tent that exactly suited me that I decided to build my own. It is six feet wide and seven feet deep on the floor, has a rear wall of a foot and a half, and is seven feet high at the front. It has five tapes attached to the upper edge of the roof along the front, and three guy ropes at the rear. It required about sixteen yards of material in the making and weighed three and a half pounds in plain balloon silk, and five and a half pounds when waterproofed by the paraffine process.

When pitching this tent in summer, or for temporary camps in winter, I find two trees which stand at proper angles and spike up a horizontal pole between them, seven feet from the ground, attach the roof tapes to this pole, guy out the rear, peg down the bottom, and it is up.

But a three-foot layer of snow over the ground will make this operation somewhat more complicated. I usually scoop out most of the lighter snow which forms the upper layers and tramp down the rest with the snowshoes. This will not do if there is too great a depth, for the fire would soon bury itself in a hole and prove smoky and inefficient.

But anything that will tread down to a thickness of one foot, or less, will prove a help rather than a hindrance, for it makes a smooth surface on which to spread the balsam brush. A good way of guying out the rear wall, almost as quickly at any time and much more quickly when the ground is frozen, and more satisfactorily, is to lean a couple of poles from the ridgepole to the ground at the rear, one on either side and slanting back parallel with the slope of the roof. A heavy pole is then laid across these and the guy ropes tied to it. One may then proceed exactly as has been described in connection with the wall tent and place a thatch roof over the regular tent roof. This is not so important, so far as the conservation of heat is concerned, in this style of tent as in the wall tent, but it protects it from the weight of accumulating snows.

In the erection of this tent it is imperative that the two trees which support the horizontal pole shall stand at the proper angle with reference to prevailing winds and storms. I usually carry along a few large spikes for putting up this pole, and in the future I shall take particular pains to see that the pole is placed on the back side of the trees.

The angle of this tent roof is not far from forty-

five degrees and it will readily be seen that the weight of accumulating snow will bring considerable pressure to bear, in a forward as well as a downward direction. If the pole is on the back of the trees the greater the weight the firmer they will be held in place. The acquirement of this trick was forced upon me by a sad experience one winter when the weight of the snow on the roof crowded the pole off, and the whole thing came down. Luckily this happened in the daytime when no one was in the tent, otherwise it might have been even more serious.

If the lean-to can be so pitched as to face the perpendicular side of a large rock, which will serve as a reflector for the fire, so much the better, as the rock will not burn out as will a reflector made of logs, even green ones, no matter how large they may be. A wind wall, made by standing heavy spruce branches upright and banking with snow, to extend from the front corner of the tent forward to the reflector, helps to confine the heat of the fire and adds to the snugness of the camp.

There is an indescribable charm about an open fire, and, so long as the sky is clear and it is not too windy, this kind of a camp leaves little to be de-

THIS TENT EMBODIES THE PRINCIPLES OF THE REFLECTING BAKER

A BED OF COALS MAKES THE BEST COOKING FIRE

sired. However, winter storms have a provoking habit of whirling and eddying, and a considerable amount of snow finds its way into the open front of the lean-to, and, melting with the heat of the fire, keeps everything damp. The big open fire, too, consumes a prodigious amount of fuel, which means a lot of work in cutting and hauling. One should be certain, when going on a winter camping trip, whether this type of tent is used or not, that plenty of wood will be available for the cutting. This is usually the case in the big North Woods, and, for my own part, I have no desire to camp where it is not. A camp-fire is one of the chief attractions of any camp, winter or summer.

Personally, I am rather partial to the Indian tepee as a cold-weather tent, partly because it will so admirably shed or support snow, and partly, I am willing to admit, for sentimental reasons. The tepee was the wigwam of the primitive red man, his home; and, when we go into the woods seeking a rest from the strenuousness of a super-civilization, it is fitting that we seek the simple, the primitive, in the home of the primitive man. Seldom do I get so close to Nature, experience such a feeling of kin to the wilderness, as when I live beneath the

smoke-begrimed walls of this canvas imitation of the home of the primitive North American Indian.

The tepee canvas, when spread upon the ground, is semicircular in shape, and when erected laces around a framework of poles set in the form of a cone. Its slopes are so acute that it will shed any but the very wettest, sticky snow, and the framework of poles is so rigid that it will support any accumulation that may gather thereon, without extra reinforcing. Its shape is such that it affords a maximum of inside space with a minimum of canvas, thus being light in weight, size considered.

The Indian warmed his wigwam with an open fire in the center, and, if we would do likewise, we must equip the tepee with smoke flaps and a draft curtain. The smoke flaps are attached near the top, held in position with poles, and are adjustable to the vagaries of the wind. They serve the same purpose in a tent that a chimney does on a house. The draft curtain is simply a strip of canvas, four feet wide, hung around the tent inside the poles. The bottom edge of this is folded under and serves as a sod cloth, while the outer, or main tepee canvas, is left rather high at the bottom. The theory of the thing is this: the air enters under the tepee canvas

at the bottom, circulates upward between it and the draft curtain, and out between the smoke flaps at the peak of the tent, thus creating a draft which sucks up the smoke from the fire along with it. It reads well, but does not always work exactly as might be desired. The capacity of the arrangement was always limited, and when it snowed, it obstructed what little draft there was; and, besides, a fire that a white man can live with at all inside a tent must be reasonably free from smoke. For such a fire it is imperative that the wood be absolutely dry, and it is a considerable task to find dry wood in sufficient quantities to heat a tent in midwinter. For early spring fishing and late fall hunting trips the open fire in the tepee is just the thing, but I soon found that it was hardly efficient on a real winter trip. Some kind of a camp stove seemed the logical solution of the problem.

An angular, square-cornered stove seemed an awkward thing within the circular walls of the wigwam, and, when I scouted around for something in the shape of a stove that would harmonize with the shape of the tent, I was naturally attracted to the conical or Sibley stove. This is a most efficient little heater, but, as it provided no

facilities for cooking, I chose one of the cylindrical style. This fitted nicely into its place in the center of the tent, and once it was installed, I found that I could leave the draft curtain out of consideration altogether, bank up the outside with boughs and snow, close the smoke flaps except for an opening for the pipe, and thus secure a cozy little camp.

I made the mistake of making my tepee too small. Its size, of course, will depend somewhat upon the size of the party, but the minimum should be twelve feet in diameter. Anything smaller than this will be found lacking in head room. There is none too much in a twelve-foot tent, and, anyway, before we can live altogether comfortably in the Red Man's wigwam, we must acquire his habit of squatting on the heels or sitting cross-legged before the little stove.

While the cylindrical stove is decidedly superior to the conical as a cooking range, it, too, has its limitations, having only one lid and no oven. We use the little stove for fry-pan work, an occasional soup or chowder, and for making coffee, but for any extensive culinary operations we build up an outside fire and use the reflecting baker and nesting pots.

One is apt to wander at some length when discussing stoves and fires for the winter camp. This is as it should be, for we must remember that the severe cold is the one thing against which the winter camper must ever battle, and, since the heat from the stove and camp-fire is the only weapon at hand, it is essential that they be carefully chosen and effectively manipulated.

Commercial tent stoves are made in almost every conceivable shape and design. We have referred to those that were conical and cylindrical. Others are oval, square, oblong, rectangular, flat, and round. Some of them are so constructed that they will fold into compact shape for carrying, but more of them are rigid. The shape of a camp stove is hardly as important as the various makers would have us believe. A strong, sheet-iron box that will accommodate good-sized billets of wood, fitted with tightly closing doors and a slide to regulate the draft, is all that is necessary. Personally, I like the winter camp stove to have a bottom, for many a time the camp will be made on the top of two or three feet of snow, and a bottomless stove would soon melt itself in out of sight. An oven, on the other hand, is by no means essential or even de-

sirable. The built-in ovens are usually hard to keep at an even temperature, and they reduce the size of the fire-box alarmingly. An aluminum reflecting baker placed against the side of the stove will do better work than a built-in oven. The pipe should telescope, one joint fitting within another, and care should always be exercised to prevent jamming.

The building of an open fire in the snow seems like a difficult task to the novice. It is not. A good camp-fire may be quickly evolved from the most unpromising material, provided the firemaker has sufficient knowledge. An old woodsman is never hurried in his preparations for a fire. He picks a bit of bark from the curly sides of a white birch, gets a handful of splinters from the riven side of a wind-thrown hemlock, and breaks a few dead branches from the spruce and balsam. Then he fells a dead tree, preferably a hardwood, cuts off a few short lengths and splits them rather fine. Placing the bark on the snow, he lays a few of the splinters and finest twigs over it and applies the match. As the bark burns the flames creep up and ignite the splinters. Then more splinters and twigs are added — not enough to smother it, for the prime requisite of any fire, after fuel, is air. The natural ten-

dency of any fire is to climb, and it is a good idea to humor this tendency until the flames get quite hot. While the soft resinous woods flare up quickly, with a hot flame, the hardwoods are more satisfactory for fuel. They throw out a steady heat and burn down to a bed of splendid coals, which are ideal for cooking purposes. Several large sticks of beech or maple will keep a fire going for more than half the night.

The solution of the bedding problem will be found in the addition of extra thicknesses to the sleeping-bag, or extra blankets to the coverings. It is possible to secure scientifically constructed sleeping-bags which will afford adequate protection in any weather and still are light in weight, but these bags are expensive and may be used only in winter, as they are altogether too warm for summer weather. A good thick bough bed should be laid between your body and the ground or the snow. These beds afford another example of the virtue of confined air, and furnish a good insulation between your body and the cold ground.

The location of the winter camp will depend upon several conditions, and lucky, indeed, is the camper who has the opportunity of locating the

exact spot before the snow covers the ground. This obviates the uncertainty and the disappointment of digging down through several feet of snow, only to find that the ground thus uncovered is entirely unfit for a tent site. Of course, if you use a stove with a bottom, you can camp on top of the snow, but a bottomless stove or an open fire would soon melt itself down out of sight.

Water should be convenient and easy of access, also wood, and the proximity of the hunting grounds or fishing ice have to be considered. Avoid extremes in altitude. The top of a hill or ridge is apt to be too breezy, and winds suck through mountain notches, while the very bottom of the valley, along the river or lake shore, is apt to be damp and the cold very penetrating. A clump of evergreens part-way up the gentle slope of some hill is the ideal to be sought.

Chapter XIII

TRAIL TRANSPORTATION

WHILE it is possible to get a winter camping outfit together which will afford adequate protection and every necessary comfort, and which will, at the same time, be reasonably light in weight, such an outfit is hard to procure and its cost all but prohibitive. A good eiderdown or caribou-skin sleeping-bag weighing ten pounds will keep one warmer than blankets weighing twenty-five pounds, but the ordinary camper, who will use such a bag for no more than six or eight nights during the whole year, hardly feels like making the necessary expenditure. And what is true of sleeping-bags applies also to tents, clothing, cooking utensils, etc. — the lightest and the best are invariably the most expensive. But one can be entirely comfortable with the regular summer outfit, provided extra blankets and clothing are added and some extra food is taken along. By the time these additions have been made, however, the outfit will have assumed such proportions and taken on such weight as to make

its transportation from the railroad or nearest settlement to the camp-grounds a momentous one.

When the snows have accumulated to a depth of three feet or more, tote-teams cannot travel off the beaten roads, and horseflesh avails one little. The lakes and streams are closed to all watercraft, and hence the camper is pretty nearly thrown on his own resources.

The amount of duffle that one can pack upon his back is measured, partly by his own strength, and partly by the condition of the trails. If the surface of the snow be hard enough so that the snowshoes will not sink in more than an inch or two, a person can carry as much if not more load than he can on a summer trail. This means that a party comprising good strong men will pack sufficient outfit at one trip to maintain them for a week or ten days. A soft snow will reduce this capacity by about one half, which means that two trips would have to be made to get in all the outfit.

A packsack, or pack-basket, while convenient enough around camp, is an unnecessary encumbrance on the trail, and an additional weight. The tent may be so folded as to form a packcloth, the outfit tied up in it, and carried with a pack-harness.

This harness should have both shoulder-straps and a tump-line. This tump-line passes over the top of the head, has a broad leather strap or webbing where it crosses the forehead, and its use takes considerable strain from the tramper's shoulders. The French-Canadian canoemen of the North Country rivers use the tump-line almost exclusively on the portages, and will tote loads up to three and four hundred pounds — a feat which could never be accomplished with shoulder-straps. A combination outfit seems the best for the inexperienced man, and it is restful to alternate between the two methods of carrying. I have formed a habit, too, of slipping my arms out of the shoulder-straps when approaching a treacherous stretch of trail, such as slippery foot logs or questionable ice, as it gives a chance to divorce the pack instantly in case of a fall or a break through.

It is sometimes possible to wrap the tent about the outfit in such a way that one corner of the tent will form a flap or cover, and thus allow convenient access to a part of the contents of the pack without the necessity of undoing the whole bundle. The articles should be placed in the pack so that the blankets and other soft material will come next to

the back of the wearer and the harder, more angular articles on the outside.

The use of the toboggan will oftentimes simplify the winter transportation problem to a considerable extent, although this will depend somewhat upon the condition of the trail. Given a good, hard snow and one man can haul a hundred pounds on a toboggan more easily than he can pack fifty on his back.

In this so-called adaptation of the toboggan to trail work we are really but reverting to the original Indian use of this implement. With the red man the toboggan was only a winter method of transportation — the canoe of the frozen waterways and the burro of the upland trails. And the toboggan, like the other Indian implements, is wonderfully well suited to the work for which it was intended. Lying flat on the snow so that its load is evenly distributed over its entire length, and having no joints to strain or wear loose, a good toboggan is a combination of lightness, strength, and flexibility, and will ride the rough, untrodden snows of the forest country more easily than any other vehicle.

Any commercial coasting toboggan will do for trail transportation, but those designed more es-

pecially for the purpose have hoods which narrow in as they curve upward, and are thus less likely to collide with trees and rocks by the trail side.

My toboggan was home-constructed, but the only difference between it and the regular models is that the curve of the front end is more gradual. This not only gives a higher hood, which allows the load to be placed farther forward and protects it more completely after it has been placed, but it also does away with the abrupt bend at the nose and so presents less resistance against the snow in front.

While a toboggan will slip easily enough on a good, hard surface, the pulling of one through any depth of soft, sticky snow is about as discouraging work as can be imagined. This wet stuff not only piles up in front of the nose, but sticks to it for its entire length, thus creating a good deal of friction.

Two men pulling on the tow-rope, one in front of the other, can, of course, apply much more traction than one of them working alone. Besides, if the second man takes care not to step exactly in the snowshoe tracks of the leader, a reasonably good trail is trodden for the toboggan. On downhill stretches, too, the extra man is a decided help, for,

while the toboggan will not, except on the very steepest pitches, acquire momentum enough so that it will run alone and allow a man to go behind and hold back on it, it will bother a good deal about running up on the tails of his snowshoes if he tries to go ahead all the time. When there are two men, one may go ahead and one behind.

The loads should be placed on the toboggan with considerable care, the weight kept as low as possible and the whole lashed thoroughly in place. The best of woods trails are rough in places and occasional tip-overs almost certain.

In the Far North the sled dog is recognized as an absolute necessity and is a great help in solving the winter transportation problem. Of late years his sphere of usefulness has been spreading rapidly southward as the popularity of all kinds of winter sports is increasing. While the maintenance of a team of six or seven big dogs may be hardly practical for the average winter camper, the use of one or two dogs as an aid in hauling the toboggan is entirely so, and it is wonderful what a help even one dog is. When a man hauls a loaded toboggan, it stops for just a fraction of a second between each step, and every time it stops it must be started

again. Progress, therefore, becomes a series of jerks, and soon becomes very tiresome. A dog is shorter-legged, and his steps are quicker; he travels on four legs instead of two, and can, therefore, apply a much more even flow of traction which is more effective. Any good strong dog will do for this work, but the more intelligence he has, the more easily he may be trained and the more pleasant his handling will prove.

I once trained an old hunting dog for this kind of work, and he proved a great deal of help; furthermore, the training and handling of him was one of the most interesting experiences I ever had. I used my regular toboggan which was five feet long and eighteen inches wide. The harness was made as simple and as light as possible. A collar was made from leather straps and lined with several thicknesses of burlap. To this the traces were attached, and a strap over the back to keep them from getting under his feet.

The training began on the first snows of the season, long before time for a winter camping trip, and the dog's first work was to haul the empty toboggan to and from the woodlot, where we were cutting the year's supply of fuel. Then I added

my axe and our dinner pail, and in a short time he had acquired sufficient strength on the rope and sufficient skill in keeping between the traces to be able to draw my little boy, two years old, around the dooryard and up and down the village street.

The first camping trip of that winter we took alone, just Skip and I. The outfit, which included tent, stove, and all food, blankets, and cooking utensils, besides an extra pair of snowshoes, made a good load on the toboggan. Our camping-grounds lay three miles back from the nearest beaten highway, and that three miles was a hard, uphill struggle all the way. Hitching Skip close to the toboggan, I took a long rope and broke trail with my snowshoes, and thus, pulling together, we made comparatively easy work of the haul. Of course it was the dog's first hard trip, and he needed an occasional pat and word of encouragement. Frequent rests, too, were necessary for him and not unwelcome to me.

Around camp he took his daily exercise and at the same time made himself useful by hauling to the tent the firewood from the cuttings, which were wherever we could find dry trees. And, by the way, this is a very desirable feature of dog-team work

ONE MAN WILL HAUL A HUNDRED POUNDS ON A TOBOGGAN EASIER THAN HE WILL PACK FIFTY ON HIS BACK

IT WAS THE DOG'S FIRST TRIP AND HE NEEDED AN OCCASIONAL PAT AND WORD OF ENCOURAGEMENT

about camp, for it gives you the chance to pitch the tent in a balsam thicket, well out of the wind and convenient to water, leaving the wood problem out of consideration, for the dogs will quickly haul it in.

While my old dog's aid in hauling the toboggan on the up-grades was most welcome, his help in going downhill was of even greater value. If you ever tried going downhill on four-foot snowshoes dragging a five-foot toboggan, you will understand how this might be. There is hardly enough incline to keep the thing in motion, letting you walk behind to guide and hold it back, but enough so that it will run on to the tail of your snowshoes about every third step. But with old Skip on ahead to keep the toboggan in motion, all I had to do was to trail along behind, apply the necessary restraining power, and aid a little in guiding. By this time old Skip had come so well to understand his part in the game that he could be controlled almost altogether by word of mouth. I had always given him credit for more than average intelligence, but the way he took to that toboggan was a surprise even to me. He acted as though he thoroughly enjoyed pulling in the harness, and I have since found that this is

common with all dogs. Any dog seems to glory in the service of his master, and can comprehend the idea of service in harness work, perhaps, more easily than in other forms.

While an old and broken-down hunting dog will work on a toboggan and any good-sized farm or household dog may answer, if I were getting a dog just for this work, I should get one that, by virtue of blood and breeding, was adapted to it — say a Husky, a Malamute, or a Samoyede. They are not only stronger and have better feet and more endurance, but they are also so coated that they can curl up in the snow and sleep thoroughly comfortably throughout the night, their bushy tails covering their feet and noses. Once in a while you will get one of these northern-bred dogs that has an untrustworthy disposition, but most of them are affectionate and at the same time possess a beauty all their own, a striking appearance which makes them valued household pets and attractive ornaments for any lawn. Such a dog is a most valued possession; a playmate for the children; a guardian of the home that lends dignity to the dooryard; a pet of the family and the real servant of his master, carrying his pack on the trails of summer and haul-

ing his toboggan in winter. Of all the Arctic breeds, the Samoyede is the only one that has become very popular with the fancier or received a great deal of recognition on the show bench, but this dog has been coming into the limelight during the past few years.

While we have said that the maintenance of a team of five or six big dogs is hardly practical for the average winter camper, we do not wish to be misunderstood on the subject. What we meant was that one would hardly be warranted in keeping a team for a whole year just to be able to use them for a week or ten days. If one takes up dog-driving as a sport and uses his team in leisure time during the whole winter, it is a vastly different matter. The sport he will have and the fun he will get will amply repay for the maintenance of the team. For my part I fail to see why it is not just as reasonable to keep a team of dogs which may be driven on the sledge any day during the winter as to keep five or six bird dogs or a pack of hounds that may be used only during a very short open season.

While I have not, to date, had any personal experience with a team of dogs of my own, I have, as Kennel Editor of 'Sports Afield,' made quite a

study of the subject of dog-driving and dog-racing, and have met and talked with many of the best drivers. I find them, one and all, highly enthusiastic over their sport.

In the first place, the handling of a string of dogs in any and all kinds of places is a task that calls for real qualities in a man, and is one reason why it appeals.

Down on the Labrador, where the snows are wind-packed and hard, the dog teams are usually driven fan-fashion; that is, each dog has a single trace which runs back to a general gathering ring near the sledge bow, and the dogs are spread out. Spread the fingers of one hand, imagine a dog on the end of each finger and one on the end of the thumb, and you have an idea of how a five-dog team appears when hitched fan-fashion. In the thickly wooded sections and where the snows are softer, the tandem hitch prevails. In this hitch the dogs are placed one in front of the other and quite close together. It seems the best for narrow trails, for the whole outfit will follow a single snowshoe trail, and on the main highways they can follow either sled track. In Alaska and the Canadian Northwest, where the trails are trodden wide, the

dogs are being driven in pairs with a single leader at the head of the whole team. A team hitched in this manner is, however, just about as long as one hitched in tandem fashion, for the dogs are spaced farther apart. This double hitch was evolved partly to do away with a cruel habit of docking the tails of team dogs. You see, in the Far North, where it is necessary for the dogs to sleep out-of-doors when the temperature falls away down to fifty and sixty degrees below zero, the dogs depend upon their tails to protect their noses and feet while they sleep. When they are hitched close behind one another, and the closer the better for pulling, the tail of the dog in front becomes heavy with ice from the condensation of the breath of the dog behind, and becomes an encumbrance. Moreover, as we have already seen, wet material does not insulate from the cold, and the use of the tail as a covering for the extremities is, for the time being, forgone. So it became a universal habit to dock them. But the double hitch has spaced the dogs farther apart, this difficulty is removed, and the teams are again waving plumes over their backs.

While a toboggan will ride over the soft and untrodden snows much better than will a sled with

runners, a dog team hitched to one of these Indian implements is not a common sight, because a dog-driver depends upon a pair of handle-bars or a gee-pole for the control of his sled, and neither of these is easily attached to a toboggan. Some dog sleds are built upon ski — a pair of these forming the runners of the sled and some sort of a platform being built upon them. One will see nearly all varieties of sleds at the big races. The regulation dog sled is sixteen inches wide and has knees about seven inches high. A platform of some kind is laid across these and enclosed with framework sides, the upper raves of which extend backward and end in a downward curve, forming handles. The driver controls the sled by holding on to these handles much as he would hold the handles of a plough. The brake consists of a hinged board, with spikes in one end, and is applied when the driver stands upon it; its power is increased if he lifts upward on the handle-bars. The gee-pole is lashed to the forward end of the sled, and, if it is used to control the load, the driver takes his place between the wheel dog of the team and the bow of the sled.

As to the best kind of dogs. This is a much mooted question. The dog-races are helping to

solve it, but it is being done slowly, as different conditions exist in different parts of the country; besides, in any locality conditions will vary from year to year, and different conditions call for different kinds of dogs. Take our Eastern International race, for instance. Arthur Walden won it the first time with a strong team of Huskies. Jean Lebel won the second time with a team of smooth-haired Dane-mastiff dogs. Earl Brydges came in first at the last race, and he drove a team of Mac-Kenzie River Huskies. At The Pas, Manitoba, the 1924 race won was by Shorty Russick with a team in which the blood of the Russian wolfhound predominated. Anyway, the races are given over too much to speed to be of the maximum value to those who wish to work their dogs. A team capable of hauling an empty sled at a rapid pace might be absolutely unfit for hauling a big load of camp equipment back in the wild and untrodden woods.

Since the original home of the sled dog and his greatest sphere of usefulness is on the barren wastes of snow and ice which comprise the very northern part of this continent, and, in view of the fact that our best team dogs have much of the blood of these dogs of the Northland, a little study of these breeds,

as they exist in their native clime, might prove interesting.

In the first place, there is considerable variance of opinion, even among those who know the dogs best, as to nomenclature. Arctic dogs are known by four different names: the Eskimo, the Malamute, the Siwash, and the Husky. These four names are often confused and sometimes used interchangeably. I have been told, by old Alaskan dog-drivers who were good authority, that these names were synonymous and that to speak of an Eskimo-Husky was like speaking of an American-Yankee. Then some one else (perhaps just as good an authority) would call my attention to the fact that his dogs were not Huskies, but pure-bred Eskimos. This confusion is quite natural, for we must remember that the realm of these dogs is far north of the jurisdiction of the kennel clubs or any organization which works for the standardization and unification of given breeds of dogs. The natives give little thought to breeding and none whatever to their naming. The American Kennel Club recognizes and registers Eskimo dogs upon sufficient proof of their purity, but I understand that the Canadian Kennel Club, while listing these same

dogs as Eskimos, usually include the word 'Husky,' parenthetically with the name, which would indicate that they consider them one and the same.

Every one seems agreed that the Eskimo and the Malamute are the same. *We* speak of the Eskimo dog to signify that it is the dog of the native of the Northland, the Eskimo. Malamute is the name by which the Eskimo designates his own dog. The Siwash was the Indian's dog, but, as the Indians were seldom noted for their good teams and took no special pains with them, they were always inferior to those of the Eskimos and are rapidly passing into oblivion. The crossing of the best selected individuals of this Indian breed with the imported dogs of the explorers and trappers resulted in the origin of the Husky, according to some authorities, while others would argue that the name 'Husky,' would simply denote a dog of mixed breeding — either an Eskimo or an Indian dog crossed on a Saint Bernard, Newfoundland, setter, or what not. Anyway, there is a good deal of conjecture about the whole thing.

If ever an animal was created for a specific purpose, surely the Eskimo dog was made to haul a sled over the snowy trails of the cold Northland.

These animals are direct and, in many cases, not far distant descendants of the Arctic white wolf and inherit many of his qualities. While his hair is neither long nor fluffy, it serves to protect him from the storms, and underneath is a thick, woolly undercoat which forms an excellent insulation, and altogether his coat is such that he can stand the most rigorous winter weather without discomfort. His bushy tail forms a covering for his head and feet when he curls up. He can, therefore, sleep comfortably in the snow at any temperature, so sleeping-quarters for him do not have to be considered. His feet are tough and do not readily become sore from rough ice, and are so compact that the snow does not easily accumulate between the toes. They will do a prodigious amount of work on a small amount of food. In Alaska, where the dog team is the one reliable means of transportation, they figure on two pounds of uncooked food per day for each dog, and three pounds for each man. In his most excellent book, 'Ten Thousand Miles With a Dog Sled,' Dr. Hudson Stuck says that 'it is possible, on fair trails, and with rigid economy, to travel five hundred miles and haul dog food and man food and the other indispensables of the

journey.' And in the next paragraph: 'Perhaps it would be putting it better to say that a team of seven dogs can haul their own and their driver's food and the camp equipment, all, of course, carefully reduced to a minimum, for a month.' With what other means of transportation could one be so independent? — everything necessary for a month in the wilderness, all at one load. That is the real service which a dog team will perform for those who know how to utilize them.

Practically everything that has been said regarding the Eskimo dog will apply to the Husky also, for this dog is only slightly different from the Eskimo, being rather more rangy and having mobile or drooping ears instead of those which are permanently erect.

Mr. Arthur T. Walden, of Wonalancet, New Hampshire, one of the best dog-drivers of this eastern country and a veteran of the Klondike trails, is experimenting with a Husky-German Police cross in the breeding of sled dogs, and it looks very much as if the experiment would prove a success. I saw the first litter of puppies weighed, when they were seven months old, and they averaged seventy-eight pounds, the largest of the litter

weighing eighty-four pounds. While they are not old enough to race as yet, they did exhibition work at the winter carnivals all over New England in 1924. On one occasion they were driven from the farm to the railroad station — a distance of twelve miles — in a trifle over an hour. So they will probably develop into a real utility breed.

The dog has powers of endurance greater than any other animal. The race at The Pas, Manitoba, is one of two hundred miles, without stop, and the fastest time ever made was in March, 1924, when Shorty Russick made the run in twenty-three hours and fifty-two minutes. This would be a feat utterly impossible for the best of horses.

These dog-races, which are now pretty well distributed all over the snow country, are creating more and more interest each year. Dog-driving clubs have been formed at Canadian points and The New England Sled-Dog Club came into existence on the 7th of May, 1924. This will probably mean that the sport will receive a new impetus in this section.

Perhaps I have wandered from the subject of Trail Transportation, so far as it affects the winter vacationist, but it seemed that dog-driving as a

sport should receive some consideration in a book of this kind, and I wished to point out the fact that a real dog team is not out of the reach of any one living where snow lies on the ground, provided he loves a good strenuous winter sport. If he has the idea that dog-driving consists in riding on a sled and being pulled through the woods and over the hills, he will be disappointed, for progress with a dog team is made up of hard work at the handle-bars and the gee-pole, but it is the kind of sport that makes one's blood run red and his cheeks tingle.

And the man who owns and drives a dog team may travel and camp where he likes in the woods of winter — the only limitations being those of his own abilities. I have become so enthusiastic over the possibilities along these lines that I am willing to predict that in the near future dog teams will form an important part in the everyday life of all the winter vacation centers.

Chapter XIV

WINTER WOODCRAFT

Woodcraft, in its truest sense, and taken in the best application of the term, consists in the ability to go into the woods with whatever outfit one may have and wrest all necessary comforts from such raw materials as may be at hand. A knowledge of woodcraft, therefore, is a knowledge of what these raw materials are, where they are to be found, and how they should be used. Winter woodcraft consists in the ability to go into the snowy forests, with no other outfit than that which may be carried upon the back, hauled upon the toboggan, or drawn by the dog team, and, by utilizing these and such others from Nature's storehouse as have not been frozen in or snowed under, provide a suitable shelter and eke out a comfortable existence.

Having no control over the elements of Nature, the first lesson in winter woodcraft should be one in philosophy. Since conditions may not be altered to suit the needs of the camper, he must change his methods to conform to them. When one has learned

to do this, he is well started on the road to successful camping. But while we must cater to the laws of Nature to a large extent, there comes a time when we must take a stand for ourselves, for, while Nature is kind and just to those who dwell within her domain, her laws are immutable and she shows no mercy to the inefficient and helpless. This is especially true in winter, and cold weather, while it may be turned to good account and thus be made to contribute to the comfort of the holiday, must never be allowed to get the upper hand.

There are three ways of battling the cold. Plenty of clothing of the right sort will form a good insulation and thus conserve the natural heat of the body. Vigorous exercise and the inhalation of deep breaths of the sharp air will stimulate the heat-producing energies of the body. But when we relax, we must depend upon a fire to keep the cold at bay. Fires have been discussed at some length in the chapter on 'Cold-Weather Camping,' but we cannot have a fire without fuel, and the fuel of the winter camp-fire will depend largely upon the selection of the right kind of axe and some skill in using it.

While a hatchet, or a half-axe, is a convenient

article to have about camp, it should not be depended upon to work up the fuel supply. One needs a real, man's-sized axe for this work. Personally I like a wedge-shaped axe weighing three and three quarters pounds, and insist that it be properly hung. The helve should be twenty-eight or thirty inches long, and the axe head placed on it at just the right angle. The test for the proper angle is to hold it against some flat surface, such as the side of a door casing. When the end of the helve touches the casing, the cutting edge of the blade should also touch in the exact middle. Personally, I have a preference for a slender handle, and it seems as if I can strike a better blow with an axe fitted with such a helve, but this may be just a notion of mine, for I know many very good axemen who are not particular about this.

The art of swinging an axe is one that may be learned only by practice. I remember an old chopper who once told me that the secret of the art lay in striking as fast as possible, as hard as possible, and placing every blow in just the right place. Those were poor instructions for a beginner, and can be much improved if their order is reversed, so as to read: Place every blow in exactly the right

PREPARING FUEL

A CLEAN KERF

place, strike as hard as possible, and as fast as possible. The most important thing is that each blow be delivered true. Light blows striking at the right angle and in the right place are much more effective than those with more force if they are just a trifle off the desired mark. When one has acquired the art of striking true, he may add more force by degrees. The speed will come later on, when chopping has become a sort of second nature, or even if speed never comes it is no matter. The best choppers I have ever known always struck with a moderate, measured stroke; they had the appearance of being slow, but worked rapidly into the heart of the tree, nevertheless.

Some years ago a quiet, slow-spoken Scotch-Canadian called on a farmer of my acquaintance and applied for work. This farmer was not in special need of help, but, having some wood to cut, he asked the Canadian if he could chop.

'Oh, yes, I can chop a leetle,' was the modest reply.

'All right,' said the farmer. 'If you can chop, I'll give you a job. I'll go over to the woods and start you in.'

The rest of the incident is best told in the farm-

er's own words: 'We went over to the woods, and it struck me that my man was rather slow. I'd show him how to cut one tree, anyway, I thought, then picked out a good-sized maple and struck in. Allen looked the tree all over, puttered around, and cut some brush. I began to think I could get it down before he got ready to begin. Then he chopped a little, slow and moderate — striking about one blow while I would strike two. I had fully decided that my man wasn't going to prove much good when he stepped back and said: "Let me finish your cut. You look warm." I looked at the other side of the tree and saw that he had already reached the heart — a smooth, clean kerf that looked as though it might have been planed. Well, I told him what to cut and struck for the barn — didn't care to enter any wood-cutting contests.'

This little story has been inserted, not to show how to cut wood, but to illustrate the difference between an ordinary chopper and a real expert. While it is doubtful if the ordinary winter camper will attain the skill of the Scotch-Canadian woodsman, if he will adopt some of his methods he will find that the task of cutting the firewood has been simplified to considerable extent.

Above all things, never forget that a misdirected blow will play swift havoc with a soft-moccasined foot. Precaution should be taken to see that the axe does not glance from the kerf, or sloping surface of your cut, and strike your foot. All brush, too, should be carefully cleared away from a space which will be described by the swing of your axe. It is a good idea to have two axes along on a winter camping trip, for if anything happens to your only axe, you are in a bad way. If the helve be broken, a new one may be made to replace it, but that involves considerable labor, and many a time a sharp blow into hard frozen woods or resinous knots will chip a piece out of the blade of the axe and ruin its usefulness. Of course, an experienced man knows these conditions and avoids them, but the novice does not.

A one-man cross-cut saw, with handle so arranged that it may be converted into a two-man tool, is a great labor-saver. Sawing wood may not be as romantic as chopping, but it increases the size of the woodpile much more rapidly.

The Marble pocket axe, the kind with a folding guard over the blade, is a most convenient tool to have along for cutting brush for thatching and for

beds, making tent pegs, poles, etc., and if one should become lost and unable to get back to camp before nightfall, it would bridge the gulf between comfort and discomfort — possibly between life and death.

There is really much less danger of becoming lost in winter than in summer, for much broader outlooks are possible through the leafless trees, and landmarks are thus kept in view. Besides, there is the trail which may be followed back to camp. However, it is folly to rely too much upon these things, for a hard snowstorm, in which the flakes are wind-driven and whirling, not only shuts out even the near distant views, but also has a tendency to confuse one's sense of direction. Furthermore, if the old snow was hard and firm so that the webs sank but slightly beneath the surface, the new snow soon obliterates all back tracks. It behooves one, therefore, to use all customary summer precautions. Get as good an idea of the general topography of the country fixed in your mind as you possibly can. Carry a good map, if one is available, and always carry a compass. And it is a good idea to use the compass before you feel that you actually need it. The best style of compass is one so

fastened on a bracket that it may be pinned on the outside of your coat and consulted at any time by simply stopping and steadying it. One should refer to it often enough so that he will have a pretty good general idea of the direction in which he is traveling.

The danger of becoming lost occurs when one is following the trail of some wild animal or is otherwise so absorbed in his quest that his mind is diverted from all attention to direction until the gathering dusk, or the abandonment of his quest, brings him to a realization that he does not know where he is with reference to camp. At such times the value of the compass is limited — the needle points always to the north, not necessarily in the direction of camp. It does, however, enable one to keep to a reasonably straight course, and prevents traveling in circles, which is a common trait of those lost in the forest. Above all things, try to avoid panic when you find that you are confused. If you sit down and study the situation calmly, it is quite probable that you can figure out a feasible solution. On the other hand, if you rush madly to and fro, you not only waste your strength and energy, but also become more hopelessly confused all the while.

We have been treating this subject of winter woodcraft on the supposition that those who venture tent life in the snowy forests have had some experience in the summer woods. All summer rules for getting out of a close situation will stand one in good stead should he become confused in winter. Pick out the most logical course and then stick to it. Changing your mind and your course of action frequently will never get you anywhere. You should have some general idea as to whether you are north or south of the camp, and may take at least an approximate course toward it. Following down a valley is all right if you are sure you have not crossed a watershed so that the water flows in the wrong direction.

One seldom gets so far back in the wilderness that blazed trails are entirely absent. Some of these were made by surveyors and timber cruisers, others by trappers, and some by hunters and fishermen. It is a good idea to decide which kind of a line you are following before putting too much confidence in it. The blazes of an ordinary surveyor's or timber cruiser's line, which are made at breast height while a man stood on the bare ground, are apt to be pretty nearly snowed under

during the latter part of the winter. A trapper, on the other hand, often spots his line while the snow is deep, and the blazes are much higher up. A surveyor's line may end at some well-marked corner, but a trapper's line usually leads out to a deserted cabin or the edge of civilization.

Anyway, a simple knowledge of woodcraft will take one through some tight places. Even to be caught out at nightfall, lost, and miles from camp, with the thermometer registering far below zero and a howling blizzard raging, is not so serious if you know how to prepare for the emergency. A temporary bivouac under just these conditions is entirely feasible. Here is where the pocket axe comes in handy. A hole may be scooped out in the snow, a brush shelter thrown up at one end and a fire built in the other end. A supply of dead branches and down stuff should be gathered and dragged within easy reach, and you are then prepared to weather out the storm. A small supply of emergency ration, such as sweet chocolate, raisins, and nuts, will help out wonderfully at such times, and should always be carried in the pocket when one ventures far into unfamiliar country.

But do not allow yourself to go to sleep in your

temporary bivouac — to do so might prove serious. Keep awake, whatever else you do.

The two worst afflictions which assail the winter vacationist are snow-blindness and frost-bite. In the case of the former, prevention is much more simple and satisfactory than a cure. The Eskimos use convex wooden goggles with narrow slits for the vision, and they evidently have hit upon the right principle, for they afford good protection. Smoked glasses will serve well enough in the forest country, and are all right where the cold is not too severe, but in the Far North, where the whole countryside is one vast sheet of glistening snow, these will not suffice. Since the light that causes the trouble is a reflected light and is thrown upward from the snow, it is essential that the goggles fit rather closely to the face around the eyes.

Frost-bite should be treated as quickly as possible. The usual method of drawing the frost is to rub the affected part with snow. A better method is simply to hold snow over the affected part until it melts and thus draws the frost out. Even holding the bare hand over the spot will not draw it quickly enough to do any harm. If precaution is not taken to draw this frost out as soon as possible, although

slowly, a very sore spot will result, and, besides, it will be extremely tender and sensitive to the cold during the rest of the winter.

The bodily capacity for resisting the cold will depend largely upon the heat-producing foods which are consumed, and the making-up of the grub list becomes correspondingly important. It is in the available additions to the grub list that the cold weather may be turned to good account, for this converts the whole outdoors into a great refrigerator, making it possible to include fresh meats of all kinds, fresh fish and fresh eggs, and even fresh cream for the coffee, in the bill of fare. Did you ever try to take such things into a summer camp? If you did, you will appreciate the advantages of the cold.

Frozen meats of any kind will keep indefinitely, and have only to be hung out of reach of prowling wild animals or Canada jays always to be ready for the meals, although the camp-axe is the most convenient tool for preparing the steak for the grid or the roast for the pot. Frozen eggs may be transported as easily as frozen potatoes — just freeze them solid before starting. When you are ready to cook them, simply peel the shell off as you

would from a hard-boiled egg, and place in the frying-pan after the bacon has been fried. As it warms up and spreads out, it cooks to a turn, and is just as good as though it had never been frozen. Frozen eggs may not, however, be thawed out and beaten up for cooking purposes. While freezing does not exactly improve the quality of potatoes, it does not spoil them, if they are not allowed to thaw out and stand afterwards. Peel the camp potatoes while yet frozen and drop at once into the kettle.

The winter food supply should contain quite an amount of fat. The cold weather seems to create an appetite for this, and it is just what is required for the building-up of heat-producing energies. Corn meal, which may be cooked in various ways, is a staple article on the camper's bill of fare.

An itemized grub list would hardly have a place in this book, for so many things will alter its make-up. Personal preferences have much to do with it. The meat supply will depend upon the available fish and game. Where ice-fishing is one of the chief objectives of the trip, it will be found entirely possible to keep the camp table abundantly supplied with fish. Rabbits may be hunted nearly all winter

in the snow country and are plentiful enough so that their meat may be relied upon.

The consumption of so much heavy foods is rather a heavy tax on the digestive organs, even though their action is stimulated by the active exercise of the winter holiday, and the ration should be balanced with some lighter foods and a supply of fruits. Dried fruits, as prunes, apricots, peaches, etc., are just the thing. Dried and concentrated foods of all kinds may be had, and the entire ration made up from them, but their value arises only when weight becomes a serious handicap.

After all, the real secrets of woodcraft, winter or summer, will never be learned from the pages of a book. Nature herself is the only teacher who can explain all her arts, nor will any one ever master all the fine points of the game. The more one learns, the more he realizes how much he does not know.

Chapter XV

INS AND OUTS OF ICE-FISHING

'A BLAMED sight more outs than ins,' commented Fly-Rod, from one corner, when the title of this chapter came up as a subject of conversation in the gun cabinet.

'What do you know about ice-fishing?' asked Tip-Up, from the big bottom drawer. He had heard the remark through a crack.

That was the start of the argument. I guess Fly-Rod was a little jealous of Tip-Up's rapidly increasing popularity, and perhaps a bit too willing to belittle the sport of ice-fishing in the attempt to injure his reputation.

'Winter angling,' says Fly-Rod, haughtily ignoring Tip-Up's question, — 'Winter angling isn't really fit to be classed with the sports. Men don't enjoy fishing when the weather is so cold.'

'That shows about how much you know about it,' returned Tip-Up. 'Men are learning really to enjoy the cold weather. But even if they should happen to be a little chilly when they first start

out, they can simply lengthen the snowshoe stride a few inches and warm up before they reach the lake. Many a man is uncomfortably warm when tramping to the summer trout stream, and with no such convenient method of cooling off.'

'The labor of cutting a set of holes through the ice when it is a foot and a half or two feet thick is enough to take all the fun out of ice-fishing — if there were any fun in it in the first place,' put in Bait-Casting-Rod, a cousin of Fly's, who stood in the other corner of the cabinet and was glad of the chance to say a word to help square his own account, for he, too, was jealous of our little hero of the frozen waters.

Tip-Up directed his reply to that quarter. 'Not anywhere near as much labor,' says he, 'as rowing a boat for two or three miles against a stiff breeze on the bass lakes, or' — speaking again to Fly-Rod — 'climbing the blow-downs or beating through the alder thickets *en route* to the trout streams, and' — addressing them both — 'exercise is really pleasant in cold weather.'

'I heard one fisherman say that he nearly froze his hands every time he dipped them into the minnow pail and that they were chapped for a month

afterwards,' persisted Fly-Rod; and Bait-Casting-Rod added: 'I heard one say that he froze his ears the first morning he went out on the ice, and that satisfied him so far as winter angling went.'

'I, too, have heard fishermen talk,' retorted Tip-Up, 'and heard them tell of painfully swollen hands and faces that were the results of black-fly and mosquito bites received on fishing trips. I'll wager a big laker against the smallest fingerling that takes your fly that the insect bites one gets on a summer trip will be far more annoying than the frostbites he gets in winter.'

'Do you pretend to think that a measly little pickerel in February can furnish as much excitement as a trout in May?' asked Fly-Rod.

'Or a bass in June?' echoed Bait-Casting-Rod.

'I know that ice-fishermen take some long strides on the snowshoes when a pickerel is jumping my flag,' rejoined Tip-Up.

'Well, every fisherman says he doesn't get as many fish in winter as in summer,' said Fly-Rod.

'I'll grant you that,' answered Tip-Up, 'but what are caught are nice large ones and their flesh is firmer and better for food.'

'It's better for the health of human beings to get

out of doors in summer than in winter,' observed Bait-Casting-Rod.

'Not by a long shot,' says Tip-Up. 'In summer the doors and windows are open so much that a lot of fresh air gets in, but in winter when the houses are shut up, the air is likely to get foul. One needs to get right out on the big open lakes to get it good and fresh.'

The Rods were both near to desperation and Tip-Up was fast losing his temper. The rest of their remarks were of a personal nature, strictly They were slamming each other, so to speak, and doing it in language that wouldn't look well in print. So we will leave them to fight it out by themselves.

Anyway, comparisons are odious, and there is no need to decry the summer trip in order to prove the charm of the winter one. While I am an enthusiast for winter sports, I have come to love, not summer less, but winter more.

There was a time when fishermen considered the winter months as a time for fireside angling — a season of retrospection and anticipation, with fishing stories and tackle repairs; but times are changing. While it is quite natural for human be-

ings to seek warm shelters and cozy fires during the winter months, those who once try the snowy woods as a vacation ground are apt to repeat the experience. There is an exhilaration that comes from a tussle with Jack Frost, a buoyancy of spirit and health to be derived from the clear, crisp air; and, as for comfort, it is a thing of comparison — one must first be cold in order to appreciate warmth. More and more each year people are coming to a realization of these things and winter sports of all kinds are gaining in popularity — ice-fishing as rapidly as any. And, indeed, it deserves popularity, for there is no better fun than a day with the tip-ups on the ice-bound, snow-covered, and wind-swept lakes.

The first thing for the prospective winter angler to do is to look up the fish and game laws of the State or Province where he intends to fish and learn what provisions have been made for fishing through the ice. Different States have different laws with reference to this. In some localities one may lawfully take almost anything — pike, perch, pickerel, salmon, togue, and trout — while in other sections the only legitimate fish is the pickerel. There is usually a limit to the number of lines to each

person — some States allow ten and others only five. The size of the catch may also be limited, and the minimum length of lawful fish specified. If one is planning a fishing trip of several days' duration, or a winter camping trip on which ice-fishing is the prime objective, it is wise to choose a locality where the laws are fairly liberal, for it is most exasperating to land, or, more correctly, ice, a big fish and be obliged to put it back.

The ice-fisherman's outfit is neither expensive nor elaborate. Signals, or tip-ups, may easily be constructed at home. My first ones were made from old umbrella ribs. The short rib was secured to a piece of wood which was to stand upright in the ice. A piece of dark-colored cloth attached to one end of the long rib served as a flag, and a loop of wire was made on the other end. The wooden part of this tip-up was set in a shallow hole just to one side of the big hole, and frozen in with a little water and ice chips. The line was attached to the upright post, down near the ice, passed up through the wire loop and down into the water. As set, the loop end of the contrivance is up and over the water, while the flag end is down, where it rests inconspicuously on the ice, with a twig underneath it to

keep it from freezing down. At times, too, when we were using especially husky little fish as live bait, it became necessary to place a sliding weight on the flag end of this arm to keep the bait from setting the flag. When a fish took the bait, it pulled the line taut, drawing the loop end of the long rib down and the flag up, where it caught the breeze and waved out an eloquent appeal for help. The principle of these tip-ups was all right, and they worked fine when the weather was favorable. But when the weather was mild, they would not freeze in. That was one serious objection. Another was that, if they did freeze in, they had to be chopped out again, and a bundle of ten of them made an awkward package to handle, so I made another set.

These were even more simple. Just a thin piece of board, say two feet long and four inches wide, with a stick two feet long mortised through the center of it. The tenon protruded through about four inches, and to this the line was attached, while the flag decorated the other end. This tip-up was laid across the hole in such a way that a tug on the line would flop it into an upright position, where it was held by the width of the base board. It is a good idea to place a small stick or twig under the ends of

this arrangement to prevent its freezing into the slush that is usually present about a newly opened hole. When the mercury runs low and a north wind prevails, there is no kind of a signal that will work. This wind sifts the snow constantly over the open surface of the water and it will congeal in five minutes, making the line solid.

On the big North Woods lakes where such conditions are the general order of things, tip-ups are not used at all, but the line is secured to any stick or branch of a tree, and the fisherman tramps about constantly from one line to another, chopping them out and loosening them up.

For ice-fishing, and especially when this last-mentioned method of setting is employed, a good strong line is essential. It simply must hold the fish when he snubs it with all his strength. When using the tip-ups under favorable conditions, it is possible to lay off a hank of line in such a way that it is available to give a big fish a chance to play itself. This surplus line should be under the surface of the water where it will not freeze in, and be held together by a bow knot which is released only by a pull from the hook end of the line. If this knot is drawn sufficiently tight, the pull of the fish will set

the signal before loosening the reserve line. But even so the line should be strong. This does not imply, however, that expensive lines are necessary. In fact, expensive lines are not to be recommended, for the continual freezing and thawing is hard on any line, and there is the ever-present danger of cutting it with the axe should it be necessary to chop it out.

Braided linen line, No. 1 or 1–0, is plenty good enough. Good strong hooks are as necessary as strong lines and for precisely the same reasons. Those that are snelled to a short sinew are best, and become necessary if they are to lend themselves to the best method of hooking live minnows for bait. This method is to run the hook, first through the tail, drawing it well through and up on to the gut, then hook it into the back, well forward. A fish will invariably swallow live bait head first and it may readily be seen why this method of hooking is so effective. The length of line depends upon the depth of water, and, unless one is quite familiar with his fishing grounds, it is a good plan to include in the outfit a weight which may be attached to the line for sounding. The bait should be just off the lake bottom. If too close, it may be-

come hidden under a stone or in a hollow of the lake bottom, and thus be out of sight of passing fish.

As for bait, I have found that I get more pike and pickerel when using live minnows, while the perch seem to prefer the humble earthworm. Lake trout and other big fish should be gone after with tommy-cod. To secure this bait in the dead of winter is something of a problem. The best and most inexpensive way to get minnows, in localities where winter fishing is a common practice, is to buy them. If this cannot be done, one may secure them in shallow water, using a dip net or minnow trap. A few of them will keep almost indefinitely if enclosed in a screen-cloth cage and placed in running water, with a few cracker crumbs dropped in occasionally. The real, dyed-in-the-wool woodsman usually knows, too, where he can dig some mud worms: at the end of some sink drain; under the manure heap at a lumber-camp stable; near a warm spring. In such places the ground will not be frozen and the worms will be as plentiful as ever.

The first time I tried cutting a hole through the ice, it seemed an extremely laborious process. It was at that time a trifle over two feet in thickness,

and I tried to make a neat-looking, round hole, and to do it all with the axe. Later I learned to cut a long, narrow gash, and then added an ice chisel to my outfit, finding that it greatly facilitated the work below a depth of sixteen or seventeen inches, and was of inestimable value after the water came in — for smoothing up and widening out the bottom.

To complete your outfit, you will need some kind of a shovel for cleaning away the snow if there happens to be any on the surface of the ice, and a skimmer for removing ice chips from the water, a bait box for worms, and a pail for minnows. One seldom needs snowshoes for ice-fishing. Any great accumulation of snow on the surface of the ice causes it to settle so that the water comes up into the snow and a new layer of snow-ice is formed which affords easy walking. When snowshoes do prove necessary, however, the bear-paw is the most convenient style. One can shovel and chop, make short turns and faster time, on these than on the longer shoes.

My experience goes to show that fish bite better on cloudy days, in winter the same as in summer. Just why this is so I am not certain. It may be that

CUTTING A HOLE FOR ICE-FISHING
Using the chisel

A WALL-EYED PIKE
Note the umbrella-rib tip-up

the shadows cast by the sun on the ice show through and scare the fish, or, perhaps, the fish are more active in mild weather, and the cloudy days are apt to be the mild ones.

When we take up any kind of sport, we seek interest and excitement. Ice-fishing supplies both of these. The memory of my first winter fishing is still vivid. The Camera-Man and I had both worked hard for the best part of a forenoon in setting out a dozen lines or so, and all without a suspicion of a nibble. Then we went back to the end of the pond and, kindling a fire, started preparations for dinner. At this juncture the first flag went up. Never shall I forget the thrill that passed through me at the sight of that signal.

Dropping everything, we both started down the pond. It looked to be a race for the first fish, but fate decreed otherwise, for hardly had we started when a second flag came up, and, leaving the first fish to the Camera-Man, I swung in the direction of the second. Every kind of sport has its exciting moments, but never have I experienced keener anticipation than while hurrying toward that flag. As the fish surged back and forth on the end of the line, it kept the flag waving about like a frantically

beckoning finger, while with every motion it seemed to me that the fish must break loose. But it didn't, and in a few moments I was pulling it in. This operation was a trifle disappointing. The fish came in without a struggle — a three-pound wall eye. Meanwhile the Camera-Man had iced one that would weigh a pound better. By night we had as nice a string as one would care to see, and since that time have been ardent devotees of the sport, spending more time fishing through the ice of winter than on the open water of summer.

That familiar axiom, 'It's not all of fishing to fish,' is just as applicable to winter angling as to that of more balmy days, and ice-fishing makes an excellent side line to work in with other sports. When the surface of the ice is smooth and without snow, one may tend his tip-ups on skates and have about as enjoyable a time as can well be imagined. The best kind of a skate for this work is one having a blade of medium curvature. This enables one to make a rapid dash down the pond when a signal beckons from the farther end, and yet permits the execution of a quick turn around the tip-ups, and, if there comes a lull in the fishing, a little figure skating may be indulged in.

Ins and Outs of Ice-Fishing

One-day ice-fishing trips are within easy reach of any one living where ice forms. On these trips a noonday fire becomes a necessary adjunct, and contributes much to the day's pleasure. As has already been pointed out in previous chapters, ice-fishing forms an excellent diversion on winter camping trips and a means of supplying the camp table with meat.

There is one other branch of ice-fishing that has not been covered by this chapter. I speak of the smelt fishing on the larger lakes. These are caught with a hook and line and a short rod. The usual method is to make a little shack and mount it on runners so that it may be hauled out on to the ice and over a hole chopped through the surface. A trap-door in the floor of the shack gives the fisherman access to this hole, and, with a fire in a tiny stove, he sits comfortably in a chair, and, baiting the hook with a piece of liver, drops it into the depths. The smelt bite very gently, and it requires a bit of delicate manipulation to bring one safely out of the water. The surface of such lakes as Winnepesaukee and Champlain are dotted with these little shacks during a greater part of the winter.

Chapter XVI

SEEKING THE SNOWSHOE RABBIT

THE snowshoe rabbit of the North Woods and the varying hare of the natural histories are one and the same creature. Either name is appropriate, and both are significant of certain characteristics in the animal's make-up — a set of unusually large feet that expand to an even larger size on the surface of the snow, making traveling easy, and a convenient habit of changing his coat to meet changing conditions in his surroundings. These big rabbits are found, in more or less abundance, throughout the extensive forests of all our Northern States and Canada. They do not care for the society of their cousins of the cottontail family and are rarely found inhabiting the same woodlot, as amiable relatives should. The snowshoe is the original rabbit of this part of the country and is still the only rabbit in the big tracts of timber into which Molly Cottontail has not yet pushed her way.

The hunting of the snowshoe rabbit is sport, indeed, and furnishes a tangible objective for many a winter camping trip, a convenient excuse for

many a day in the splendid, snowbound woods, and an incentive which lures many a brain-weary mortal to the health and pleasure of the open in winter. They are fleet of foot, keen of eye, quick of ear, shy, hard to see, and difficult to shoot, making them a game worthy of the chase.

When conditions are not favorable to other methods, one may seek the snowshoe rabbit by still-hunting. In practicing this kind of hunting, the sportsman works through the swamps as quietly as possible and takes them on the run as they jump from cover. This method calls for stealthy stalking, for the rabbit is quick to detect the slightest sound, and will be away long before the hunter arrives in sight. Moreover, one needs to be always on the alert and ready to go into instant action, for, like the ruffed grouse, the rabbit may burst from the most unexpected places, and, with three bounds, be out of sight among the low-hanging cedars. The rabbit does most of its feeding during the night, so that there is but little use looking for them on the feeding grounds during the daytime. Thick cover, old brush-piles, and such spots are favorite resting-places for them during daylight, and one should try to rout them out.

Snow-trailing is a rather more successful and more enjoyable form of rabbit-hunting than is still-hunting. To be successful in this method, one should be on the ground as soon as possible after a snowfall. If the snow is old, the swamp will be a maze of tracks and runways out of which no individual trail may be chosen. Simply choose one trail and follow it as closely as possible. When this trail leads into a brush-pile or under a fallen tree, watch for a white form to shoot out from the other side.

But by far the best way to hunt rabbits is with a dog. In this kind of hunting, you take your stand at some likely spot overlooking a good runway, or several of them, and shoot the rabbit as the dog drives it past you. In this way you not only see more rabbits and get more shots, but you also have the opportunity of working the dog, which, for the man who likes dogs, is one of the best parts of the day's work.

Several different breeds of dogs are used for this purpose — beagles, foxhounds, spaniels, and mongrels of mixed and uncertain breeding. One of the best rabbit dogs I ever knew was a collie farm dog that took up hunting all by himself. These mongrel

dogs sometimes make good, but are not apt to be as reliable as a pure-bred hound. The choice of a rabbit dog usually lies between a beagle and a foxhound.

Personally, I am inclined to favor the beagle. This merry little hound seems to be the logical rabbit dog — just cut out for the work. The one objection to him is that he cannot run in the deep snows as well as can the longer-legged foxhound. However, there are two sides to this, as to all other questions. Throughout the fall and early winter the beagle can run as well as any dog; then, when the snow begins to get deep, it will quite likely become so deep that no dog, however large, can make any headway until it is crusted over. And here again the little dog has an advantage, for the crust that will bear him easily will often be insufficient to hold the weight of the larger dog and he will sink in to his breast at every jump. Then, too, the beagle can negotiate the brier patches and the blow-downs more easily than can a larger dog, and so long as the running is easy, a short-legged hound will follow a trail more rapidly than will a long-legged one. This is because hounds run by the body scent, which hangs just a few inches off the ground. The beagle

seems to be just the right height to catch this easily. Often have I watched a beagle running in this way and apparently paying no attention to the trail, but cutting off corners and avoiding loops. A hound running in this way will soon outdistance one that must nose out each individual track and footprint.

Beagles seem to work best on a warm trail, which is as it should be. Cold trailing is no part of the work of a rabbit hound. The average swamp is criss-crossed in every direction with runways, and cold trails and the hound that spends his time trying to cipher them out will never get very far. The rabbit hound starts his game by nosing out brush-piles, brier patches, and holes under fallen trees where Bunny is wont to take his naps, and a fresh trail is thus assured from the start. The hunter can assist in this starting game by kicking around some himself, but it is better for the dog to let him do his own starting. Among the beaglers who follow the field trials there is some feeling against the handler kicking out the rabbit for his beagle, and in some cases it is a rule which is heavily penalized by the judges. The beagle is one of the most popular of all our hunting dogs. He is a most likable little

chap, and those who have been working for his interests have continually advanced the policy of working the show dogs and showing the work dogs, with the result that the beagle of to-day is a creature of both beauty and utility.

While the breed of your rabbit dog is an important question, the selection of a good individual animal from any given breed is even more important. Pick a dog with a bright, intelligent eye, a symmetrical, well-proportioned body, strong, sinewy legs, and round, compact feet.

The choice of a rabbit gun is a matter of no special importance. Almost anything will do. The rabbit is very easily killed. My personal preference, if I were getting a gun just for rabbit-hunting, would be a light, twenty gauge, double gun. It is plenty large enough, and is easily and rapidly handled in the thick brush. Number six or number eight shot are about right.

One thing that you certainly will need, if you would follow the snowshoe rabbit very far in his native haunts, is a pair of snowshoes. Of these there are styles and kinds almost without number and they have been discussed at some length in the chapter entitled 'Selecting the Snowshoe.' The

best rabbit swamps are about the most tangled, brushy, log-strewn bits of wilderness that one ever encounters, and for this reason the bear-paw or tailless type of snowshoe is the best suited to the needs of the rabbit hunter. They are nearly round, and short, which enables the hunter to make his way in and out among the thick brush without fouling every tree he passes, and to turn quickly when the occasion demands.

While discussing the rabbit hunter's outfit, we must not neglect to mention the compass. The big swamps are absolutely flat and the timber so thick as to obscure the view of any landmarks, so that it is easy, indeed, to become turned around or confused. And in the event of a snowstorm which would obliterate the back trail, it might be difficult to find one's way out.

Any one living near the haunts of the game may get in many an hour's rabbit-hunting without being away from home. The rabbit is easily and quickly started, and then runs in comparatively short circles, so that one gets his shot quickly. Even though one have no more than two hours at his command, one may be reasonably certain of some sport. However, if one wishes to devote an entire winter vaca-

tion to the sport, it is best to put up at some farm house or lumber camp in close proximity to the hunting grounds, or else camp out, either in an abandoned lumber camp or in a canvas shelter which can be taken with you, and pitch it at the point which seems best suited to your plans. Camping in winter, as has been thoroughly discussed in an earlier chapter, is entirely feasible and altogether practical if you go about it in the right way.

Rabbits may be hunted throughout the fall and all winter long, but the best time for a camping trip is during the latter half of February. The snow is usually four or five feet deep at that time, but it has been settled from time to time, and there is ordinarily a crust which will hold the dog and make the easiest kind of snowshoeing.

It is a good plan to lead the dog until you get in the near vicinity of the place where you wish to take your stand, otherwise he is likely to jump one on the edge of the clearing, which may lead back into some other patch of woodland. As soon as you are well into the woods, however, let him go, and in a short time his welcome voice will be ringing glad music among the cedars.

Meanwhile you have taken your stand at a point

to command a good runway, or several of them. These runways, or beaten paths, form a veritable network crossing the swamp in every direction, and the better idea you can get of their general layout, the better are your chances for success, for a rabbit when pursued by the hound will invariably follow one or another of them, and your part is to be at the right place at the right time.

When first started, the rabbit may run right past your stand, giving you a shot the first thing, and again he may run in the opposite direction. Sooner or later, however, he will circle and come back. Your first intimation that he has turned will be from the voice of the dog, which draws nearer and nearer. Then you catch a glimpse of a white form away down through the cedar trunks, then another glimpse, this time nearer, and you have to be ready to shoot quickly to hit the mark: and not only quickly, but more or less skillfully as well, for the rabbit runs with erratic, bounding leaps, and is hard to connect with in thick cover. Then the dog is away in search of a new trail.

If this takes him a little while, you will not count the time lost, for the big swamp is a wonderful place in its four-foot mantle of white. You stoop to

ON THE WAY

A FRIENDLY PAT

THE RABBIT HUNT

examine the trails of the other woods creatures that have passed this way, you watch the chickadees and the Canada jays, listen to the shrill notes of the pileated woodpecker, and almost before you know it the shrill voice of the little hound is calling you back to the rabbit-hunting. Round and round leads the merry chase while the woods resound to the music of the little hound. Again the gun speaks, and again the little dog comes up for a friendly pat and a word of encouragement. One has to be always on the alert when watching a runway, for he never can know just when the rabbit will pass. The voice of the dog gives one some idea, but at times he will be close on the heels of the rabbit, and again there may be half a mile of crooked trail between the two.

Rabbit-hunting is an interesting game from the moment the dog voices the first intelligence of the trail until the long shadows crowd each other out across the swamp, and you take one last shot at a fleeting form, snap the chain on the dog when he comes up, and measure some long snowshoe strides in the direction of home or camp, where the odor of frying rabbit soon enhances the coziness of the snug interior.

Chapter XVII

THE FUN OF FOX-HUNTING

Of all the game animals that are hunted for sport, none furnishes more real fun than does Sir Reynard. Possessed of a good nose, sharp eyes, and fleet feet, and wonderfully wise in the ways of men and dogs and guns, the red fox is perhaps the hardest of all animals successfully to stalk and shoot, and therein lies the fun of fox-hunting. The man who can take up the trail of a wise old fox and follow it until he overtakes and kills him has reason to be proud of his skill.

To make good trailing there should be at least four inches of soft snow on the ground and none of it crusted. If there be a greater depth, there should be at least four inches over any previous crust. This amount is necessary to deaden the footfalls. If a part of it has recently fallen, so much the better, for it obliterates all old tracks and assures you that the trail you are following is reasonably fresh. Foxes usually curl up under some low-hanging evergreen during a snowstorm, and if you start out too

soon after it stops snowing, there will be a scarcity of trails. A light fall of snow early in the evening, with a clear sky during the last half of the night, should result in good trailing conditions the next morning.

Upon striking the trail of a fox, there are four things to be considered before making any definite plans of procedure: whether or not the fox is already aware of your presence; the condition of the country, open or wooded; the direction of the wind; and the probable business of the fox, whether seeking food or a warm spot in which to rest. The hunter may ascertain whether the fox knows of his presence or not by the gait as shown by the trail. A frightened fox travels at a gallop, while one on a leisurely search for food trots along, placing one foot directly in front of the other, and leaving a straight, precise trail. One does not need to follow far to find out if the fox is on a food trail. A hungry fox is a thoroughgoing sort of a chap, poking an inquisitive nose into every spot that promises a tiny morsel. From a tuft of grass he digs a field mouse, investigates a few old woodchuck holes, then swings back into the woods, where he stealthily stalks a grouse. The partridge, however, is seldom

to be caught napping, and no blood or feathers show on the snow. The rabbit is a much easier victim, and the telltale snow records the tragic fate of one such and a much-needed meal for the fox.

With a good square feed under his hide, the fox loses interest in many things along the trail and seeks a sunny spot, in the shelter of a bush or a rock, in which to curl up. It is here that a knowledge of the topography of the country stands the hunter in good stead. To follow directly on the trail is folly, for a very keen set of eyes, ears, and nose are trained on this particular region. A long détour is sometimes advisable — get well around so as to work into the wind and carefully cover the area into which the trail apparently led. Examine every bare spot in the lee of an evergreen tree. Watch for a flash of red-brown fur, for the fox may see you first. The gun should be carried ready for instant action, and every step must be placed with the utmost care.

Should the fox jump and get away unobserved, the only thing to do is to sit down and wait. A fox thus started will not usually run far, but will soon conceal himself behind a bush to watch the back trail. If thus jumped early in the day, a fox will

invariably seek another bed, provided he is not followed too closely, but if the time be late, he may take up hunting and not curl up again during the afternoon.

Sometimes one can locate his fox before it jumps from its bed, and killing him will simply be a case of long-range rifle work. Then again the first glimpse of him will be on the jump, which will necessitate snap-shooting of the quickest kind — requiring a cool head, steady nerve, and quick eye. These facts make the choice of a gun something of a gamble. For long-range work the rifle is the thing, but for a running fox the shotgun is much to be preferred. Whichever one you carry, there will come a time when you will wish you had the other.

Two hunters, working together, can often secure a fox that would easily evade either one of them working alone. One of the hunters follows the trail, while the other watches at a stand some distance ahead.

As we proceed along the trail of Sir Reynard, we soon become alive to the fact that there are many things besides fox tracks to interest us. As each new snow descends upon the land, it is as though Nature had spread a clean sheet of paper on which

all the shy and furtive creatures of the wilds might record their comings and goings and many incidents of their daily lives. Many of these things come under our observation even though we tend quite strictly to the trail of our fox. Reynard has a persistent habit of following many of these trails himself, partly in the hope of gleaning a morsel of food and partly to mingle his trail with that of other animals and thus sidetrack pursuing men and dogs. Even glistening, sparkling, snow-covered countryside, with drifted walls and half-buried fences, the wintry forests with their naked hardwoods and white festooned evergreens, offer much in the way of compensation, and, if you can sling a prime red fox over your shoulder as you hit the homeward trail at nightfall, then your day is complete.

While snow trailing the red fox is an excellent diversion and a good way of passing an otherwise dull day, it is, indeed, sufficiently interesting to form an ample excuse for a camping trip in the winter woods. However, should one decide to devote an entire winter vacation to the sport of fox-hunting, he will find that a good hound will add much to the sport.

There is no form of sport that is practiced in more

different ways than fox-hunting with hounds. Fox-hunters of history, and those of the Southern States to-day, go out in large parties, usually on horseback and with large packs of hounds, and run the fox to the ground. They have nothing but contempt for the man who would shoot the fox. In some of our Northern States this form of hunting is imitated, but on a smaller scale. A half-dozen hunters, with perhaps twice that many hounds, go out to some high hill and turn the dogs loose, while the hunters compose themselves to enjoy the music of their voices. They do not kill the game, but get their pleasure from the possession of the dog that can lead the pack.

But the real, old-fashioned, northern fox-hunter! He follows his hound on foot until the chase is well started, then takes his stand on some high ground overlooking a likely runway, and listens to the hound and watches for the fox at the same time. He enjoys the music and excitement of the chase as much as his southern cousins, but he also likes the feel of a gunstock against his cheek and the ring of the nitro in his ears. This kind of a fox-hunter must have an intimate knowledge of fox-lore, his hunting grounds, and his dog.

Since the entire success of this kind of hunting will depend upon the hound, it is important that he be selected with care and judiciously handled. There are, in this country, two distinct types of foxhounds, the English and the American. These two classes are subdivided into several strains, such as the Walker, the Williams, the Goodman, the July, etc. The English hound has been bred to conform to a high standard of excellence so far as size, beauty, and uniformity are concerned, but the American hound has the better nose and more speed and endurance. For the purposes of the northern hunter the American hound is quite superior.

He has been bred, generation after generation, on purely utilitarian lines, and, while he lacks the uniform size and regular markings of the English hound, he is much his superior in intelligence and fox-lore. He has a better nose and he has more courage to strike out and beat the likely coverts for the fox. He will drive better, proclaiming the intelligence of the trail as he reads it from the warm track with a more melodious voice than does his English rival. The foxhound should have a lithe and graceful appearance, and at the same time the strength and solidity which would denote endur-

ance. The feet are as important as any one thing in his make-up. They should be round and compact, like the foot of a cat — never long or spreading.

Another important requisite of the single hunting hound is the voice. This may not be so important in the pack hound, but it makes all the difference in the world with the hound that hunts alone. Some hounds bay with a prolonged 'O-o-o-o-ow,' uttered at irregular intervals, while others yap continuously, 'Ow, ow, ow,' at every jump so long as the scent is warm. The long baying has a musical ring and sounds well enough, but a fox will play much better in front of the steady yaps. The former, uttered now a long distance off, then close at hand, has a tendency to frighten the fox, keep him on the jump and running in long circles. On the other hand, if the dog barks continuously, the fox always knows just where he is, and will take things more leisurely and be more likely to pass within range of the hunter.

Of course a rangy, long-legged hound can run in deep snow with greater ease than a short-legged one, but the dog of more compact build is apt to have the more endurance and staying power. Good feet and legs are prime requisites.

A good foxhound is a much more intelligent and companionable creature than is generally supposed, but he must be properly trained and handled in the right way to bring out the best that is in him. I have known foxhounds that did not have the sense to find their own way home when the chase was over. This was because their homing instincts had been allowed to become dormant. They had been strictly confined either on a chain or in a yard, and never taught the simple lessons of self-reliance.

The northern single hunting hound requires a far more systematic training than the southern pack hound. First of all he should have the opportunity to become acquainted with his master, be made to realize that here is his one best friend, the person who gives him the finest times of all his life. Then he should be accustomed to some noise and confusion so that he will be self-reliant. He should be taught to follow at heel, to come at call by voice or horn, and to get in or out of vehicles at command. Some of our best authorities on the subject of the foxhound will tell you never to make a companion or a pet of a hound, and I presume that too much pampering and petting might breed jealousy among the hounds of a pack. For our northern

style of hunting, however, I believe that the better the hound and the hunter understand each other, the more successful they will be in the field, and certainly the more enjoyment they can derive from their sport.

Personally, I like dogs just because they are dogs, and sometimes flatter myself with the thought that they like me, too. Consequently, I make a companion and a pet of every dog I have anything to do with, including a hunting dog, almost always. I have an old hound who through a long and useful life has ever demonstrated the correctness of this theory. This hound early showed signs of unusual intelligence and was always treated as any household dog would have been treated. She developed into one of the best hounds I ever used, never particularly fast, but remarkably sure, which is an even more desirable quality. While not demonstrative, she is affectionate and companionable, attends strictly to her own affairs, and is well liked by the whole household and neighborhood. In the field her intelligence stands her in good stead. For instance, if she is unable to put up a fox within a reasonable length of time, she takes my track and follows it up to my stand, where she tries to

tell me that it is of no use. If conditions appear favorable, and I wish her to continue the hunt, I have only to give the command and away she goes. She never goes home without me. But if I decide that there is nothing doing and start for home while she is away in search of a trail, she takes my track when she comes across it and usually overtakes me before I arrive. She soon also understood that we don't hunt foxes after nightfall, and invariably comes in within an hour after dark.

Climatic conditions have their effect upon hunting with the hound in our Northern States. Early in the season, while the ground is yet bare, it is usually too hot and dry. At this season, it is necessary to choose dull, damp days, or else run during the early morning hours while the dew is still on the grass. Half-snow and half-bare ground makes about as difficult a combination as the hound will ever have to negotiate. Fine, powdery snow, such as we get in extremely cold weather, does not hold scent at all, and a hard crust not only fails to hold scent, but also cuts the hound's feet cruelly. Two or three inches of soft, damp snow — either the first of the season or else an addition on top of the packed and crusted accumulation of late

winter — mild weather, and southerly winds make ideal conditions.

Upon starting out, the dog should be kept on leash, or at heel, until a trail is found. This will probably be a cold trail, and, unless the hound gets enough scent from the first three or four footprints so that he will give tongue, it is best to take him off and look for fresher signs. The hound should not bark too much on a cold trail, but if he speaks occasionally it gives the hunter the chance to keep posted as to his whereabouts. If the frequency with which the hound speaks increases in proportion to the freshness of the trail, the hunter who is thoroughly familiar with his dog can make a fairly accurate estimate as to where the fox will be jumped. This enables him to place himself in a strategic position for an early shot. While the cold-trailing notes should be intermittent, a warm trail should produce steady baying. The wonderful burst of music with which a good hound announces a freshly vacated bed or hot trail cannot fail to quicken the pulses of the hunter. It is his signal to take part in the game — the fox is afoot.

It is here that a knowledge of the lay of the land stands one in good stead and enables him to inter-

cept the run more quickly. The foxes of different localities differ somewhat. Those that have not been too persistently hunted will circle and play for hours at a time within a comparatively short distance of the spot from which they were started, while those that have been much hunted are more likely to lead off on a long chase.

To be able to stand on some high, open hilltop and watch a chase in the valley below and on the opposite hillside, is a rare treat for any fox-hunter. From such a vantage-point one may watch the tactics of the fox and the workings of the hound. But it is when the fox drops out of sight and heads in your direction that the excitement really begins. This is the one supreme moment of the whole day for me. Louder and louder rings the voice of the dog — nearer and nearer they come — but still invisible. A hundred thoughts muddle my brain. I wonder if I have picked the right place. Surely I should have been more likely to see him from the next ridge. But he might pass while I was getting over there. It is hard to stand still — impossible to do anything else. Glancing down to see that the gunsights are clear and the safety off, I am surprised to find that my hands are shaking like leaves.

THE HOPEFUL START AND THE TRIUMPHANT RETURN

Could I hit a flock of barns? Then the fox glides into view, my nerves all vanish, and I wait, as cool as you please, until the fox has loped within easy range and roll him over easily. Meanwhile the hound continues to voice the knowledge of the crooked trail down in the woods, and it is some minutes before he comes up for his share of praise and patting.

The choice of a gun for fox-hunting is not a life-and-death matter although there is a good deal of satisfaction in the use of any good arm. It must have a long range and shoot strong. Personally I like the automatic, mine being a Winchester. This hangs well and shoots well, and the action places five shots at the command of the trigger-finger, in rapid succession. When out for the fox, I load my gun with two double 'B' shells, two single 'B' shells, and one number one. Of course, they shoot out in the reverse order, giving me the finer shot to begin with and coarser ones as the fox runs farther and farther away. There is a movement on foot to restrict the use of the automatic shotgun as a hunting arm, and some sportsmen have gone so far as to have the magazines of their guns plugged so as to hold but two shells. Personally I do not believe

that this is necessary for fox-hunters at least, and it is only on very rare occasions when an automatic shotgun will prove any more deadly than a double-barreled gun.

Sir Reynard is a keen-witted chap and brings all his mental powers into play when pursued by the hounds. For instance, when a fox passes over a wind-swept hill, where the outcropping ledges are blown clean of snow, he keeps to the rocks and out of the scent-holding snow. Another favorite trick, which he often plays when he can get a sufficient lead over the dog, is to drop into a rabbit swamp, rout out a bunny, follow it around on two or three circles, then, with a long side jump, strike out in a new direction. The hound, even though he may not be given to running rabbits, will in running the two trails together get used to the mixed scent, and be quite sure to overrun the point where the fox side-jumped, and it usually requires considerable casting about on the part of the dog to locate the right trail. This same trick is worked, earlier in the season, with the cattle and sheep in the farmer's back pastures. These animals are mildly curious at the sight of the fox as he runs in among them and will follow along for a little way tramping out his

trail. This very thing is a contributory cause for much of the trouble that exists between sheepmen and owners of hunting dogs. The hound, tending strictly to the business of following the trail, comes suddenly upon the sheep. These simple creatures are thrown into a panic by his voice and take to bleating and fleeing. The farmer, observing the frightened flock and the hound casting back and forth to pick up the lost trail, calls down curses on the heads of both the hound and the hunter, while Sir Reynard slips away with a grin on his shrewd countenance.

One needs a whole long day at his command when starting out to hunt foxes with a hound. Of course, there are times when one will be quickly brought to bag, but more often you need to start early and stay late. This kind of hunting forms an excellent objective for a winter camping trip, and if one has some knowledge of the game and works hard, he should be able to secure enough fine prime pelts to make the trip a profitable one.

Chapter XVIII

DAME NATURE'S AUTOGRAPH ALBUM

THE first snows of autumn work a wonderful change in the familiar face of the countryside, and these changes are a decided advantage to those who would study the wild creatures of the forest. These snows when spread over the land serve as a great sheet of paper — a leaf of Dame Nature's autograph album, so to speak — on which every one of the wood folk must scribble its signature and a little chapter in the record of its daily doings. Each new snowstorm affords a clean page of the story book of winter, and it becomes much more than an autograph album. It is the guest book of our winter vacations, on which the wild creatures record their visits to our camp; the autobiographical history of every creature that walks the woods of winter.

Following these trails, noting the signatures and reading the records, is one of the most interesting and valuable experiences of the winter holiday. We may study the wild animals persistently and

hunt them diligently, but, even though we may see them frequently and possibly bag an occasional specimen with the shotgun or rifle, we must take up their trail in the snow if we would really learn of their daily habits. You see, when we are near enough to wild creatures to observe their actions, they are almost certain to be aware of our presence, and, consequently, their behavior is unnatural. When they make their trails in the cold solitude of a winter night, their actions are unrestrained; their footprints record their persistent quest for sustenance and all their little struggles and tragedies. Furthermore, an intelligent study of these winter trails leads to a knowledge of their habits that makes it possible to overtake and observe them more often in winter than in summer. Every trail has an animal at its end; sometimes it may be in the depths of a warm burrow or the coziness of a hollow tree, and again it may be right out in the open. I remember an experience on which a trail led us quickly to the very presence of an animal that is seldom seen in daylight.

We had started out one day, early in March, Mrs. White and I with our two little boys. We were on ski, all of us, and were headed for a high open hill

where was good coasting on the long blades. As the snow had been settled by several thaws, and was now hard, with a thin coat of soft stuff on top, there would be good trailing and the chance of pointing out a few things to the little boys. Scarcely had we got out of the village when the boys, who were ahead, yelled that they had found a new trail. Ski-ing up we found it to be that of a skunk that had just awakened from its winter hibernation and had ventured forth from the warmth of a snug burrow into the cold of a snowy world. We explained the trail, which was a double line of footprints, and followed it along for a little way, when it shifted. The double row of footprints indicated that the skunk had been traveling at a walk. The new trail showed all four footprints in a straight line, but each set of four impressions was placed diagonally across the line of the animal's progress. This trail indicated that the animal had speeded up and was traveling at a lope. I wondered what had been the cause of the hurry, for a skunk is a self-confident kind of a fellow and given to moderation. But I was not long to wonder, for, glancing along down the line of tracks, my eye fell upon Mephitis himself. Here was a chance I had been

A RUNWAY THAT SHOWED TRACKS OF PORCUPINE, FOX, AND SNOW-SHOE RABBIT

TRAIL OF A SKUNK ON THE LOPE SHOWING THE FOOTPRINTS IN GROUPS OF FOUR

looking for, and, unlimbering the camera, I started in pursuit of the animal. The skunk is nocturnal in his habits, and it is not often that one gets the chance of photographing him in the daytime. Of course, the ski were much more speedy than the lope of a skunk, and ere long I was as near as I cared to be and began looking in the view-finder. My family shouted directions for getting closer, but I wasn't quite as enthusiastic about skunk pictures as I had thought I was. You see, this scion of the tribe of Mephitis Mephitica had just waked up, and how did I know but what he had got out on the wrong side of his bed, or burrow, and would be consequently irritable? I got his picture, and, though his image appears small on the negative, I was content, for I had no desire to be exposed to the creature's wrath, and worse, while I executed a kick turn on the ski.

Like the skunk, the raccoon hibernates during the winter months, and it is only when tracking snows come early in the fall or on the late snows of early spring that the trails of these animals may be followed. All things considered, the best time of all the year for animal trailing is about the first of March. By that time the winter's accumulation of

snow has become settled and wind-packed, so that one may get about easily on either ski or snowshoe. Then wait for a day when there is a light, new snow on top of the old crust. This deadens the sound of the snowshoe and the scrape of the ski, and makes very nearly ideal conditions. This new snow, which is apt to be damp at this time of the year, records all the details of each individual footprint which would be lost in the drier, deeper snows of early winter. With the lengthening days, too, nearly all of the animals become more active, and, as has already been pointed out, those which sleep through the coldest weather have awakened and add their trails to the others, thus making the tales more complete.

As interesting a trail as may be singled out from the maze of tracks which criss-cross our woodlands is that of the red fox. Reynard is not only a wide traveler, but he is one of the slyest animals in all the woods as well, so his trail is long and ever interesting. It may start at a neighbor's poultry house, where he has been trying to filch a little poultry, and, unless he is successful in this, his trail will be a tale of a keen hunt for food. He pokes his nose under many an evergreen bush, scratches at the

snow over faintly remembered woodchuck holes, sniffs at the tracks of a red squirrel which led along the edge of the woods, then swings back under the trees. Here he does a little stealthy creeping, the drag of his body showing between his footprints. Our sport takes on a little excitement. Had a fine old grouse given its life to satisfy Reynard's hunger? No; the leap was just a little short, and a few inches beyond where the fox landed was a hole in the snow, and beside it a pair of wing-tip prints which plainly told us that the grouse had thundered away to safety. We were glad, not only to learn that this one individual bird had managed to save its life, but also to know that the hard crust of a few days previous had not imprisoned the birds beneath its surface. This very thing sometimes happens, for the grouse often dive well beneath the soft surface of the snow to sleep snug and warm in a fluffy white quilt, and, if a sudden thaw and subsequent freeze-up creates a hard crust, they may be effectually imprisoned and die a miserable death. This fox, evidently maddened by the thundering wings, had followed for a few jumps and then gone off on a new quest. We shall resume his trail in a moment; but in the meantime we take a look in the

direction the partridge had flown. Not in vain either, for but a short distance away we spy the bird, well up in a big yellow birch, walking back and forth along the branches and picking off the tiny buds which furnish much of the food of these birds when the snow gets deep. And this is a feature of snow trailing — no matter how persistently we may follow any one animal, or how exclusively we devote ourselves to its trail, its affairs are so linked up with those of the other denizens of the forest that they are inseparable, and ere nightfall we are much the wiser concerning all the wild creatures.

Our fox's trail continued on out through the woods, down across a pasture lot, and into a cedar swamp. Here he picked up a wood mouse — a mere mouthful to stand between a poor fox and starvation — and then continued on in search of a more satisfying bunny. His trail would soon merge with a maze of rabbit runways which are hard to follow out. So we head straight through the swamp. The fox has a habit of driving the rabbits out of cover and running them down in open chase, and the big northern hares, or snowshoe rabbits, form a staple article of the red fox's diet. By chance, we

stumble upon the scene of his present capture before we are through the swamp, the bloodstained snow, a few scattered bits of fur, about all that remained of bunny. Then, from off on the hillside there comes the voice of a hound, and we wonder if he has picked up the trail of our fox, and if the hunter that we have been following has become the hunted. Reynard is an outlaw, with a price on his head, and his need of constantly eluding pursuers has had quite as much to do with developing his sagacity and cunning as has his quest for food.

A study of the trail of the snowshoe rabbit on a soft, light snow affords an example of the kind providences of Nature which gave this shy, timid, and altogether helpless creature such facilities for making a getaway. Its feet are large anyway, and when they come in contact with soft snow they expand to considerably more than their regular size, thus making travel comparatively easy for this animal when practically all others must wallow. Further than this, a rabbit trail contains but little of interest, for bunny is a quiet, unassuming, and non-aggressive little creature that seldom does anything more interesting than hop about and

nip a few tender shoots from low-growing trees and bushes.

Muskrat trails are scarce in midwinter, for they spend most of their time in their dome-shaped houses, but occasionally, in mild weather, one will be out for a little airing. Their trail, which leads from and to an open spring hole, may be distinguished by the mark of the tail between the footprints, as it always drags behind like the rudder of a boat.

The trail of a mink may be picked out by the fact that the footprints are always set down in pairs and often lead in and out of open water. Mr. Mink is a hustling, energetic fellow, and if one follows him far enough he will find many evidences of his success as a hunter, and a fisherman, too, for that matter. His trail is most frequently found along the banks of some stream. A favorite trick is to plunge into the water at some point where there is an air space between its highest level and the ice above, and swim to the next opening. In this way he gets a good many fish — trout, perch, and suckers. Then he goes back into the woods, investigates every bush-pile he passes, runs under every fallen log, and explores the cavities

under the roots of old stumps. Anything is game to him — rabbits, grouse, squirrels — and for his size he is most bloodthirsty and a valiant little fighter.

Another track, and one that is sometimes confused with that of the mink, is that of the weasel. True it is that the trail of a small mink and a large weasel do have many points in common, but there are ways by which they may always be differentiated. Both record their footprints in pairs, but while those of the mink are spaced equidistantly, those of the weasel are set down without any regularity whatever. Besides, the weasel never goes into the water, while the mink is never so very long out of it. They both belong to the same general family and possess the same bloodthirstiness. A tiny weasel never hesitates to sink his teeth into the throat of a snowshoe rabbit or the neck of a grouse, and commits many depredations among the domestic fowl of the poultry houses. An unbiased study of the trail of this creature will convince the most confirmed lover of animals that he should be sought with gun or steel trap and killed whenever possible: this in the interests of other wild life.

A very conspicuous trail, especially through the softwood forests, is that of the porcupine. On a light snow this trail is made up of a double row of footprints which are easily distinguishable from the fact that this lumbering creature toes-in as he walks. When there is any great depth of snow, the porcupine's trail resembles a long trench or trough in the snow with the footprints faintly discernible in the bottom. The porcupine seldom does anything to make his trail worth following; indeed, if we follow him far, our animosity is apt to be aroused, for 'Porky' subsists upon the bark of the coniferous trees, and in procuring this he often girdles the tree and kills it. In some localities a bounty is placed on his head for just this reason. In other sections, especially where extensive forests prevail, porcupines are quite rigorously protected because of the fact that they are the only wild animals that may be killed without firearms, and may, therefore, be the means of saving the life of a person lost in the forest.

The tracks of the smaller wild folk are legion. The dainty tracings of wood mice ornament the white groundwork of the forest everywhere. Squirrel tracks lead to and fro among the tree-trunks.

The chipmunk has long been asleep underground, but the gray and the red squirrel are both abroad. Where dried weed stalks are still shedding a few seeds upon the surface of the snow will be found the tiny tracks of the winter birds. Bird life is none too plentiful in the woods of winter. Here we catch sight of a red-breasted nuthatch who is working over the bark of an old hemlock for the occasional larvæ of some insect that would furnish it a mouthful — or rather a beakful — of breakfast. These pretty creatures are quite fearless, and will work away unconcernedly within a few feet of a person on snowshoes. The cheerful chickadees are ever present, and their merry notes seldom fail to strike a responsive chord in the heart of the winter woods wanderer. Saucy blue jays are seen, flashing a blue streak across the woods. The Canada jay, or camp robber, makes his presence known when you stop for your noonday lunch, and these, with the white-breasted nuthatch and the woodpeckers — both the big pileated and the smaller hairy and downy — pretty nearly comprise the bird population of the snowy woods. Not many, to be sure, but we have a warm place in our hearts for the brave little creatures who face the rigors of a

northern winter and wage a relentless warfare on the insect enemies of the forest, while their cousins are basking in the warmth of balmy southern air. These winter birds need encouragement, and a few pieces of suet tacked upon the trees at various places will tide them over the hard times. These are for the woodpeckers, chickadees, and nuthatches. A few handfuls of grain scattered about will appeal to the grouse and quail.

There is one other family of bird residents which may not properly come within the scope of this chapter, since they seldom leave trails on the snow, but they make their presence felt, nevertheless. These are the owls, and especially the big snowy owl, which is only a winter visitor and is a big, strong, fearless bird. He works in the night, on silent wings, and plays havoc with the rabbits, grouse, and other small woods creatures.

So long as the snow is not over a couple of feet in depth, deer tracks will be found all over the woods, but with the accumulation of late winter these creatures 'yard.' Deer yards have been described in the chapter entitled 'Winter in the Wild Woods.' Winter is a hard season on the poor deer, and they see hard times as the forage grows continually

more scarce, and, during a severe winter many of the weaker ones perish from starvation.

Back in the big woods one will find the trail of the lynx or the bobcat. His tracks are larger than those of the fox, nearly round, and each footprint falls quite a bit to one side of a line drawn between them, while in a fox trail each footprint is squarely in front of the one just behind. Like the fox, the bobcat is carnivorous and preys upon the smaller wood folk. A staple article of his diet is the northern hare. He hasn't the speed to run him down in open chase as the red fox does, but he has the patience to lie in ambush and spring on him when he hops within range. Besides, he is an adept at climbing, and sometimes pounces upon the unsuspecting bunny from an overhanging limb of a tree. All these little tales are read from the records on the snow.

When we seek our trail stories in the library of the big wild woods, we find new characters depicted in the tales — the pine marten, the fisher, the otter, and even the wolverine. The finding of one of these rare trails and following it up to see what the animal has been doing is one of the most interesting experiences of the whole winter. The

black bear, like his smaller brother the raccoon, hibernates during the winter, but his trail will often be found on the first snows and he comes out again quite early in the spring.

Chapter XIX

SCALING THE MOUNTAINS ON SNOWSHOES

THE scaling of a mountain on snowshoes is no more difficult, physically, than scaling it on the bare ground of summer, provided the mountain does not rear its crest above the line of timber. Of course, it is rather more difficult to follow any woodland trail when it is covered with four or five feet of snow, for this covering has altered the appearance of everything, obliterated all signs of a path, and buried all but the very highest sign boards and tree blazes. But so far as the actual labor is concerned, one will go more easily on good snowshoeing than over the bare, rough, and rocky paths of summer. The snow really smooths up the trail, and, while the warm air of summer makes the strenuous exercise of climbing rather oppressive, the sharp air of the colder season stimulates just this kind of effort. But when we leave the shelter of the forest — step out from the protecting timber — it is much as though we had stepped across the Arctic Circle. These upper heights are sub-

jected to the buffeting of all the winds and storms of winter, which render their surfaces like great cones of hard-packed snow and glare ice. Furthermore, when you venture on these heights you may be subjected to the very same buffeting of the elements. The climatic difference between the top of a five thousand foot mountain and the valley below is very much greater than might at first be imagined. When I made my first climb up a winter mountain, I was not aware of the extent of this difference and the experience very nearly proved a serious one for me.

We were touring the White Mountains on snowshoes, the Camera-Man and I, some years ago, and before winter sports of any kind, and winter mountaineering in particular, had gained such popularity as they enjoy at present. In the course of our wanderings we reached the Profile House, in Franconia Notch, and stayed for a few days with the caretaker; we two being the only guests at the big hotel at the time. Our plans, made in consultation with the caretaker, were to climb Mount Lafayette from this point and from its summit to proceed down another ridge that would bring us out at a point nearer to our subsequent destination.

MT. LAFAYETTE AND FRANCONIA NOTCH FROM THE TOP OF BALD MOUNTAIN

Scaling Mountains on Snowshoes

We made an early morning start. The weather was typical of the mountain country in midwinter. The sun shone brilliantly from a clear blue sky and there was just a suspicion of a breeze from the north. The Lafayette trail starts at a point nearly opposite the head of Profile Lake, zigzags back and forth up through a noble spruce growth, skirts Eagle Cliff on the back side, and then follows a long spur up to timber-line. That far we experienced no difficulty whatever, although there were places where the tree blazes were snowed under, but we could easily follow the trail and really enjoyed the climb. The crisp air was sharp and bracing, the twisting trail interesting, and the great white winter woods wonderful. As we neared timber-line the forest growth took on a dwarfed appearance and the trunks of the trees were coated thick with frost. Finally we came out on an open ridge, to find that there was a low sag between us and the main summit. This appeared to be a smooth, hard, even surface of snow, but when we tried to cross it we found that it afforded a very unstable footing. Time and again, one or the other of us would suddenly feel the footing give way beneath our feet and drop, neck deep, snowshoes and all, into the

snow. As we found out afterwards, this little valley is covered with a dense spruce growth, scrubby and about the height of a man's head. A narrow trail had been cut through this. At the time of our visit the whole little valley was entirely covered with drifted snow, but it was not solid. The branches of the little trees held it up and left a space underneath. When we stepped on such a place, down we went. Many a time it would have been exceedingly difficult for one to have extricated himself from such a place alone.

In this little sag are two small bodies of water known as Eagle Lakes, and they, too, were deeply drifted over. Above these the cone of the mountain rose abruptly (1125 feet in a mile and a quarter) to a sharp point at the top. This whole upper portion of the mountain was completely coated with ice. A sleet storm had evidently lashed this summit earlier in the winter and coated it with a smooth surface of ice from which all the subsequent snows had been quickly blown.

Now the glazed surface of hard-packed snow or ice-coated ledges would not be so hard to negotiate if they lay on a level, but when you find such a surface tilted at the most acute angles, you find it

difficult to keep your feet at all. To make this even worse, the steepest and smoothest slopes often terminated at the top of a perpendicular precipice, hundreds of feet high.

While this was our first trip on a winter mountain, it was by no means our first trip in the woods, and we had been aware of the value of preparation. Step by step we had been over all the possibilities, but we had failed to comprehend the magnitude of the difference. We knew that the upper reaches of the trail would be icy and had included a pair of ice creepers in each outfit, and changed as soon as we came to the final climb, leaving the snowshoes wedged under an overhanging ledge. Our creepers fastened on with elastic bands and had the advantage of extreme portability. They would afford a fairly safe footing on an icy sidewalk, but when we tackled that forty-five-degree slope, bent against the wind, they simply were not there. They were not sharp enough nor of good enough material to bite the hard surface, and the elastic bands would give at the critical moment and allow them to slide around on to the side of the foot.

The gentle breeze that played about the Notch below was a biting gale up here. We soon perceived

that it would be impossible to face it as would be necessary in going down toward Twin Mountain, so we abandoned that part of our plan, but we wanted to make the top of the mountain as a sporting proposition.

The wind swept across the mountain-side with a force that made it next to impossible to stand erect and carried tiny particles of frost which stung our faces like needles. We were warmly dressed, but that gale penetrated all our clothing and fluttered our heavy woolens as a summer zephyr flutters a light cotton shirt. That we ever reached the top of that mountain and got back down again safely is nothing short of a miracle. We would pick out a place that appeared to offer a little footing and make a run for it, then pick out another one farther on. Time and again we slipped and started down long, smooth inclines, at the foot of which lurked certain death, but always we managed to stop. Just under the topmost pinnacle a high ledge afforded a little protection and we swung our arms to warm up. Then we stepped on top and each photographed the other before starting back down. By this time we were badly frozen — our cheeks, noses, and ears being solid. And going down

seemed even worse than the climb, but we finally reached the base of the cone. About this time a snow squall put in appearance and we were at a loss to find our snowshoes.

I am willing to admit that I pretty nearly lost courage. The strain of the climb over the treacherous ice, with its ever-present danger; the cold and our frost-bites; the fact that we had eaten nothing since morning; and then the temporary loss of our snowshoes — it was almost too much, and I was all but ready to give up. The Camera-Man, however, was a plucky little chap and insisted that we should soon be all right. Then we found our snowshoes, went over to the edge of the woods, picked out a sheltered, sunny spot, ate a cold lunch from our pockets, and the world looked good once more.

Now I would not appear to decry mountain-climbing in winter. Those experiences on Mount Lafayette only served to instill a profound respect for snow-clad heights, and the fact that this mountain came so near getting the best of me created a desire to meet and conquer others of his kind. This adds to the zest of the sport, and one experiences much satisfaction in conquering that which seems unattainable.

Adequate preparation is most important when one takes up winter mountaineering, and a little discussion of the various items which differ materially from those of summer may not be out of place.

All the general principles of insulation in clothing, as set forth in Chapter II, will apply to the garments which we wear up a winter mountain, but, as the mountaineer is subjected to more marked climatic changes than the average winter vacationist, it is essential that his clothing conform to these changes. The first part of the climb, up through the woods where the snow is soft and winds do not strike, is warm work, and the outer layers of clothing should be easily removable so that they may be carried in the packsack. Excessive perspiration dampens the underclothing and destroys its insulating powers; hence should be avoided on a climb. But when you come out on the bare slopes above the line of timber, you will need all the clothing you can carry. And its prime requisite is that it be impervious to the wind. The entire body must be protected, face and all. The addition of a really good windproof parka, to pull on over all the rest of the clothing at timber-line, is a good thing.

Unless this has a fur rim about the face, however, one should have some kind of a scarf or a tippet to wrap about the head or the nose and cheeks will be frost-bitten in a severe wind.

The snowshoe for the mountaineer has been described in Chapter III, but as this is such an important item of equipment, a little repetition may not come amiss. Climbers are not all agreed, as yet, as to whether they can negotiate the steep slopes more easily on the tailed or tailless type of snowshoe. There seems to be a growing preference for the latter, and these bear-paw shoes certainly do have one distinct advantage on a mountain climb. This is the ease with which they may be carried after timber-line has been passed and their immediate usefulness gone. A pair of long snowshoes carried on one's person act like a skate sail and have a tendency to float one off down the mountain-side. A pair of bear-paws will go into a good-sized packsack, or at least tie so closely to it that they will not catch every breath of wind that sweeps the upper heights nor interfere with one's progress as he picks his way on ice creepers across the slippery slopes. While the snowshoe used on the level should have a turned-up toe to take

it easily over small obstructions, those used for climbing should have absolutely flat toes. These hold much better and prevent slipping back. Whatever snowshoes you wear on a high mountain, or any remote wilderness trip for that matter, should be strong and in thoroughly good repair. Even then it is a good idea to carry along a little repairing material to tide you over an accidental break.

The ascent of the upper reaches of the White Mountains in winter is a feat which is comparable to climbing the peaks of Switzerland or the Canadian Rockies at any time of year, and similar preparations must be made. Many climbers provide themselves with ice axes. These have a cutting edge on one side and a sharp hook on the other. The axe is used to chop steps and footholds in the ice and the hook to assist in balancing — a sort of third leg. It is a good thing to have at least one ice axe in each party, but a climber may progress much more rapidly on a good pair of ice creepers than if he must chop a foothold before placing each step. Ice creepers, of various styles and various stages of usefulness, are sold at sporting-goods and outfitters' stores. As good a pair of ice creepers as I ever wore were sold by a dealer in ice-cutting tools

and made for the use of the icemen. These would grip the ice firmly and stand any amount of strain. They clamped to the rubber, and this hitch was made more secure by the addition of a pair of straps. Their most serious drawback was their weight. I once had a pair made for me by a local blacksmith from the 'sections' of a mowing-machine knife. They were permanently screwed to the sole of an old heavy shoe and could be strapped over the rubber. I have met 'Appalaches' on the trail who were equipped with most ingenious creepers, and I understand that these may be secured at the present time from outfitters in Boston.

While walking on ice creepers is by no means a difficult art, the steep slope of a high mountain is no place to learn new tricks. A little practice lower down will be time well spent. Any ice creeper is most efficient when all its spikes are pressed equally into the ice. On level going this is simple enough, but on the grades — and that is where you need them — it is otherwise. Each step must be placed with care and the leg so thrown forward as to bring the foot very nearly flat down on to the surface of the ice.

It is a good plan to include a rope in the outfit of each party making the ascent of a mountain of any great height. This is to be used in emergencies — say when the wind is so strong as to make the footing precarious or in case of a blizzard when one member of the party might easily stray from his fellows and not be able to find them again. Emergency rations should also be carried — enough for three or four days; for you may be obliged to weather out a storm. Mountain storms come up with amazing suddenness and develop terrific fury. The wind has been known to develop a velocity of one hundred and eighty-six miles an hour on the summit of Mount Washington (official reading made in January, 1877), and this record has never been equaled elsewhere. The summits of Mount Washington and Mount Moosilauke have both been occupied by scientific parties during the winter months, who recorded and reported conditions as they existed at this height in cold weather. An interesting account of the winter occupancy of these summits is included in Frederick W. Kilbourne's splendid book, 'Chronicles of the White Mountains' (Houghton Mifflin Company, Boston). These terrific winds and the cold and storms constitute a combination

which is beyond the powers of human endurance to withstand. They must be avoided at all costs. Never venture above timber-line when a storm appears to be brewing. Below the line of timber and in the comparative shelter of the woods, one may weather out a protracted blizzard with no serious results if he be properly equipped and supplied with emergency rations.

Most of the ascents of the winter summits of our eastern mountains are made by large parties. The Appalachian Mountain Club conducts an annual midwinter trip into the White Mountains, and similar trips, on a slightly smaller scale, are conducted by the Green Mountain Club of Vermont over their chosen peaks. The midwinter climb of Mount Washington is an annual event on the programme of the Dartmouth Outing Club. When a good-sized party, such as these, attempts the climb, the element of danger is greatly reduced, for there are many sturdy mountaineers in all such parties who know the trails and conditions and are more or less wise in the ways of winter weather.

Many of the members of the Dartmouth climbing expedition often go up on ski. This might be considered the acid test of a real mountaineer.

The ski, however, are worn only to timber-line, where ice creepers are substituted. I believe the honor of first climbing Mount Washington on ski rests with Fred H. Harris, founder of the Dartmouth Outing Club. On that initial trip, the first time ski had ever been pushed up one of these New England mountains, Mr. Harris made the run from the Halfway House down through the woods to the Glen House, four miles, in fourteen minutes. That was heralded as a wonderful feat, as it truly was, but, just to show the ever-increasing popularity of ski, we might add that ski-races are now being held annually which take in this very same run as a part of the twenty-two-mile course. I refer to the Mount Washington Marathon Ski Run which has been run during the past two winters in conjunction with the Berlin Midwinter Carnival.

In connection with winter mountain-climbing, and the hazards thereof, it might be said that, while the Presidential Range of the White Mountains has claimed a total of nine human lives as a toll from those who climb its peaks, not one of these casualties has occurred during the winter months. This does not mean that winter climbing is not as dangerous as summer, but rather that a winter

mountain is not so much a creature or a thing of temperament. One can but have a most profound respect for a winter mountain — it discourages any trifling.

Of course, winter mountaineering is by no means confined to the eastern part of the continent. The mountains of the main range of the Rockies are even more popular during the season of snow. And still farther west, where snow seldom falls at the lower levels, the snow-covered mountains of winter are especially attractive.

Nor is all of winter mountaineering confined to work on the upper heights. This is fortunate for many who are scarcely equal to the ascent of the highest peaks, and even the sturdy mountaineers hardly care to climb one of them every day. There are many lesser elevations from which just as pleasing prospects are to be had, and there is much pleasure to be had from just traveling about on snowshoe and ski and looking over the well-known summer features as they appear in their garments of snow and ice. The Flume in the White Mountains, for instance, is really much more wonderful in winter than in summer, for one side of the great cleft is a mass of icicles sixty feet in height.

I have spent some good winter vacations by touring the mountains on snowshoes, going from place to place and climbing a peak when I felt like it or the weather was propitious. One may camp out each night on such a trip, but I have usually preferred to spend the night at a hotel rather than be burdened with so much camp equipment.

Chapter XX

PHOTOGRAPHY IN THE FROST COUNTRY

The camera has come to occupy an important place on our trips afield, a necessary adjunct to the other items of equipment, and the pictures we secure are more highly prized than any other trophies. And at no other season of the year does the camera come into its own as in the season of snow, for winter photographs are more truthful reproductions and consequently more valuable than those of other seasons.

Winter pictures are more rare than those of summer, and therein lies a part of their charm, but it is because they so closely resemble the scenes they depict that they make their strongest appeal. And what is true of our 'stills' is also noticeable in the 'movies.' Films of the Far North may be most faithfully reproduced on the screen, and always draw large and appreciative audiences. The camera may be said to be color-blind in that it fails to differentiate between many of the shades of the spectrum. The face of Nature in the summer-time

is one riot of color, and the photographer who records a mental picture of these colors as they show on his ground glass or mirror can but feel a touch of disappointment when his prints develop in the tray. It is a psychological fact that red — with its different shades — appeals to the human eye more strikingly than any other color. To the glass eye of the camera these shades appear as black; in fact, black and white are the only shades which your lens will reproduce, but, as winter scenes are largely studies in black and white and the gradations thereof, winter photographs are quite truthful likenesses of the face of Nature as it appears in winter.

To be sure, there are times when the colors of a winter sunset are even more striking than those of summer and even more impossible to reproduce. Snow-white mountains, too, against a clear sky present a problem for any photographer, but such scenes are comparatively rare.

The fact that the color scheme of the scenes you wish to portray and of those which may be reproduced on the finished print are identical simplifies certain problems of the amateur photographer to a great extent. Nevertheless, there is a variety in the

scene, a subtlety in shade and shadow, and intricacies in frost fettering and trail lore that is a challenge to the more expert.

While the direct light of midwinter is not so strong as when the sun is more nearly overhead, there is so much reflected light from the snow-covered surroundings that this is rather more than offset, and exposures may be even shorter than in summer. Furthermore, snow pictures should not be overexposed. If this is done, the snow itself will lack quality and the finished print will have a flat white and dead black appearance. These facts might be taken as an indication that fast lenses were unnecessary for winter work. Of course they are not, but a fast lens is even more desirable in winter than in summer. For, if there is any one thing that will spoil a winter picture quicker than another, it is a long exposure. By long exposure I do not necessarily mean overexposure, for that part may be easily governed by stopping down the aperture, but a long exposure, even though the diaphragm be set to correspond, is not apt to produce good results on the snow. It seems that the reflected rays of light which slant upward from the snow are of a quality which have a most violent

effect upon the negative. This means that instantaneous exposures are almost a necessity if we would depict any quality in the snow itself. Consequently, a camera with a lens that will work rapidly enough to permit exposures of short duration even in poor light are most desirable. Moreover, the fast lenses permit the portraying of some of the action in winter sports, and this certainly requires speed, for the snow and ice sports are all fast and full of 'pep.'

Nothing short of one thousandth of a second will 'stop' a man going over a ski-jump, and the moving toboggan or exciting hockey game requires almost as much speed. Of course, one may reduce the speed of the exposure slightly when it is possible to place the camera so that the moving figures will be coming nearly into or going directly out of the picture, but these are not always the most desirable angles. When using a fast lens, it should always be remembered that it has a thin focus, and that many parts of the picture will likely have a blurred appearance unless the stop is used and a correspondingly longer exposure.

Really the choice of a camera will depend upon the use you plan to make of it. If pictures are the

chief object of the winter holiday, one may well afford to equip himself with a good outfit, for he will naturally either possess, or acquire, the ability to use it. The reflecting types of cameras are, perhaps, the best for the genuine enthusiast. They are equipped with focal plane shutters which are as rapid as need be, and a decided advantage in their use lies in the reflecting mirror which shows the picture at full size and in true focus up to the moment of the exposure. This insures correct focus on the negative and the correct placing of all the figures in the picture, and, besides, gives the photographer a better idea of just how the finished picture will look than may be secured from the miniature image in the view-finder or the inverted figure on the ordinary ground glass. The use of large-size plates, too, will usually result in better work. Of course, the large-size pictures are more expensive to make than the small ones, but they have advantages. Commenting upon the size of a camera, in his valuable little book, 'Outdoor Photography' (The Macmillan Company, New York), Mr. Julian A. Dimock has this to say: 'Some writers commend the small plate as making the exposure less expensive. To my mind this is an objectionable feature.

If the loss of a plate is of no moment, you will use them promiscuously and will never learn to do better work. Think first and expose the plate afterwards. If additional cost will help to make you thoughtful, pile on the expense — it will prove a stepping-stone to better things.' And there is a lot of truth in that statement. I have done some magazine work with the camera and usually use the 5 × 7 plate machine for this work. Oftentimes there was no one to go along with me, and I was obliged to pose as a central figure in the picture and manipulate the camera at the same time; possibly a dog would have to be included, and all posed as naturally as possible. The setting of the camera, focusing with the desired background, arranging the threads for manipulating the shutter, and then getting everything in shape for the exposure was the work of half an hour. You may be sure I did not care to do it, barehanded, on a cold winter's day, any more often than necessary. Consequently I took special pains with each exposure, and the pictures made in this way were among the best I ever made.

But the person who is out for the fun of ski-running or snowshoeing, or is following the beagle

into the rabbit swamp, or the twisting trails of other wild creatures wherever they lead, will hardly wish to be burdened with a cumbersome camera and supply of plates, nor has he the time to spend in their manipulation. Even the cheapest of ordinary cameras will make surprisingly good pictures when given the right chance, and they have the decided advantage of being very nearly 'fool-proof.' Any one can make pictures with them. I have made snapshots with a 2A Brownie which have been enlarged to full-page size for magazine illustrations and still retained sufficient sharpness. But, of course, these cameras have their limitations.

The portability of a camera will depend upon many things other than the size of the pictures it will make. Those which fold up compactly may be toted more easily than those which are rigid, and if their construction be mainly of aluminum they will be considerably lighter and smaller than if their body be made of wood. Roll films are much lighter than glass plates and not subject to breakage, and the film pack may be used in an even smaller camera than the roll film, for there is not the necessity for a space at each end for the reels. I have a little film-pack camera, 2A size, the dimensions of which,

when closed, are $1\frac{3}{4} \times 3\frac{1}{4} \times 5\frac{3}{4}$ inches. This little instrument will drop easily into my hip pocket, or into the breast pocket of my stag shirt, or placed in the case and worn on the belt as one would wear a hunting-knife. With all due regard for the devotees of the larger sizes, I must say that these little instruments have many points in their favor besides their extreme portability, and I have formed the habit of slipping mine into my pocket even when I am out principally for pictures and using the larger camera.

Many of the most interesting pictures are those which must be made on the instant — a fallen comrade on snowshoes, an unexpected fish on the tip-up, a frightened animal that must be snapped at once. When such pictures present themselves, one has no time to unlimber a heavy and cumbersome camera. It is also desirable that persons appearing in pictures appear unawares. To get this appearance, especially if the figures happen to be the guides and backwoodsmen, one should make the exposure without their knowledge. If one must focus and arrange his subjects, most people will unconsciously take on a strained and unnatural pose; and if you would catch your subject unawares, you must have

a camera that is convenient and easy to manipulate. The tiny camera whose presence is so unobtrusive even on hard trips is just the thing to catch these rare snaps with. And make it a rule never to venture forth without it.

When cameras are to be used in very cold weather, it is well not to bring them near artificial heat. If the metal parts are subjected to quick changes from heat to cold and vice versa, they become coated with moisture and are liable to rust. Extreme cold, too, slows down the action of the shutter on nearly all cameras, and puts some of them out of commission altogether. The focal plane shutters are, perhaps, less susceptible to this than any of the others. It is the oil and grease on the working parts which congeals and causes this slow action, and it is a good idea to have this entirely removed, by the makers of the shutter, before starting on any protracted trip into the cold Northland in search of really good pictures. The cold, too, is supposed to slow down the emulsion on the film or plate just a little. This is, indeed, so little as to be imperceptible to the average novice, and if the slower action of the shutter corresponds with the slowness of the plate, no harm has been done.

Films should be protected from extremes in climate as much as possible — sudden changes in temperature will cause them to gather moisture which may possibly ruin them.

While I have already said that the greater amount of reflected light which is present in winter offsets the diminished strength of the direct light, one should be certain that he is getting this reflected light. A rim of dark spruces around the scene you are photographing will make a lot of difference. You need almost to double the length of your exposure when the reflected light is shut out. I remember one time, at a sled-dog race, of trying to photograph the teams as they came in. A huge crowd of people were present and pressed in close around the teams. I was with the photographers and movie-men at one end of this open space and 'shot' the teams to my heart's content, but failed to allow for the rim of humanity that shut cut practically all the reflected light, and the resulting negatives were far too thin. The only safe way is to use an exposure metre. Of these there are several kinds. As good as any is one that is loaded with a strip of sensitive paper of the printing-out kind. This is exposed to the light and the time

noted until it darkens to a standard tint as indicated by the color of the surrounding metal. A scale on the instrument then indicates the proper exposure at all the different stops. This relieves one of the bother of figuring out the correct time, and allows him to give his attention to other features which are so necessary in the make-up of a picture.

Again I would repeat, and with emphasis, do not overexpose. To do so is to lose all the tone and quality in the snow. If your picture is correct in this respect, one should be able to tell from it whether the snow was soft and damp or dry and powdery. He should be able to decide whether it lay as it fell or was wind-blown and drifted. The most delicate shadows and dainty traceries should be faithfully reproduced. These are the subtleties of snowscapes which are forever lost if your negative is exposed and developed past a certain point. Track and trail pictures, too, must be handled carefully or the main features will retire into the flat white background of snow.

Any discussion of development or printing would practically be out of place in this book, as it now is in the life of the amateur photographer him-

self. We have all joined the 'press-the-button brigade' and are leaving the rest to some one else. Even those who do their own developing almost invariably use the 'tank,' which reduces it to a mechanical process so far as the photographer is concerned. But we are getting results just the same.

It is to the winter mountaineer, perhaps, of all the cold-weather vacationists, that the camera makes the strongest appeal. The ostensible objective of the mountaineer is views, and any scene that is pleasing to the eye will make a good picture. So the mountaineer has pictures always around him, and, furthermore, the use of a camera will impress upon him the habit of getting the most out of his views.

The trails of the wild creatures of the woods make most interesting photographic studies, and the faithful portrayal of these trails is a task that is difficult enough to appeal to the most enthusiastic. To be of the maximum value, trail photographs should not only show the exact likeness of the individual footprints of the animal that made the trail, but should also show where he was going and the object of his journey. All the little details of

THE WORK OF THE LUMBERMAN AFFORDS INTERESTING PICTURES

track pictures may be brought out only upon just the right snow conditions and with the sun at just the right angle.

Winter hunting and fishing scenes are always full of interest, and also winter camps and camp-fires. The work of the lumberman, too, is one which makes a good picture.

Winter pictures are supposed to tell a story of the cold — that is, the figures are supposed to be huddled down in their collars and have their hands in their pockets; but with this new and cheerful attitude toward winter such poses are unnatural and hard to find.

Chapter XXI

THE LIFE OF A LOGGING CAMP

SCATTERED at frequent intervals throughout all our big-woods country are little centers of industry which are of much interest to the winter vacationist. I refer to the lumbering operations and the logging camps. Where the timber cuttings are at any considerable distance from human habitation, it is found to be more economical to construct camps and provide food and lodging for the men right back in the woods than to transport them in and out. A good-sized camp is quite a village in itself, and fairly hums with activity. There is usually a big cook-camp, which is a combination kitchen and dining-room. Here the camp chef presides, assisted by a couple of 'cookees.' In another building, near by, are the sleeping-quarters, a double tier of bunks built against each side of the camp and one or two big box stoves in the middle — these latter being always red-hot. The stables for the horses are usually spoken of as 'hovels,' and of these there may be one, two, or three, depending upon the number of

horses at work at the camp. Then there is the blacksmith shop, where horses are shod, sleds repaired, peavies hung, and chains mended. In addition to these there may be a storehouse, where baled hay, tools of all kinds, extra sleds and supplies are stored. This comprises the working part of the settlement, but there is one other building which might be termed the 'administration building,' but usually is called the 'office.' Here the business end of the operations is looked after. This is the 'boss's' headquarters, and here the timekeeper keeps tabs on all the men of the crew and looks after the company's books as well. Here, too, the scalers gather with their figures, which are the pulse by which it is possible to estimate the activities of all the chopping and hauling crews. The 'boss' and the timekeeper occupy this little building all winter, having bunks in one corner, though they take their meals at the cook-camp. The lumber-camp office is usually small, and is the building which has been mentioned in the chapter on 'Winter Vacations' as the ideal headquarters on a winter camping expedition.

The lumber camps occupy a much larger sphere in the life of the winter vacationist than might at

first be imagined. Their tote-roads form convenient avenues over which the camp outfit may be hauled, and even the tote-team may be pressed into service and freight the duffle in. Their storehouse makes a convenient source from which to purchase extra supplies, and the hospitable cook is always glad to set out a lunch to hungry campers, a thing much appreciated when one is new to the woods. Or one might do worse than to board at a lumber camp for the entire vacation — choose one in a rather remote section of the country, and with this as headquarters you may branch out on trails of your own to the rabbit swamp, the ice-bound lake, or the summit of some mountain.

Even the operations of the lumbermen are unusual and sufficiently interesting to make a trip into the woods worth while, just to watch and study them. If planning a trip for this purpose, it is well to choose a camp in a mountain country, for the steep slopes present difficulties and hazards which are ever a problem to the lumbermen, and this makes their work more exciting and more interesting. Many a time I have come across lumber camps on my wanderings in the White Mountains, and on several occasions I have made trips into the

woods just to see the work. And perhaps there is no way in which I can make the life of one of these camps more plain than by relating a little account of one such trip.

It had been a grand good winter for logging, and the landings at the big mill, down by the railroad station, held millions of timber in the log. The snow had been, and still was, deep. The weather was a steady cold, every day golden to the lumbermen, and they were making the most of their opportunities. At the camps all was hustle and hurry. The foremen of the various crews had contrived to start a little rivalry among the teamsters, and the chopping gangs had to work to keep them going. The logging train with its wheezy, screeching little engine, was working overtime in the vain endeavor to haul the logs from the camps to the mill as fast as the teams hauled them down from the mountainsides. These were the conditions as the Camera-Man and I found them when we blew into a White Mountain logging town for our Washington's Birthday holiday a few years ago.

A single large company has its headquarters at this place. The big mill, offices, supply stations, etc., are located near the station, and a score or

more of camps are scattered throughout the surrounding woods. Many of these are connected with each other and with the big mill by two-sled roads, over which the logs are hauled, and a logging railroad runs up Hatch Brook, touching at ten or a dozen camps.

We were out just to see and photograph the logging operations, and wanted to get these in as spectacular form as possible. So we hunted up the general manager and asked his advice.

'Go up to Camp Three,' said he; 'they are logging away up on the Russell Ridge, and she sure is some steep.'

Immediately upon arriving at the camp, we left our packs in the cook-camp, ate a light lunch, and started for the cuttings, two miles away on the mountain-side. About halfway there we came to the first 'gutterman,' at work in his gravel pit. On each of the steep pitches there is a gravel pit in which the gutterman keeps a fire going to thaw out the gravel which he spreads on the road to check the speed of the sleds going down. In other localities where the soil is of a different nature, cheap hay or straw is used instead of gravel, this being kept in a little shack, and it is the work of the gut-

terman to keep it shaken up and spread over the road. But in this section gravel is abundant and most effective. The gutterman told us that the teams were nearly due, so we set up our cameras at one side of the road to await their appearance.

Soon a rumbling was heard from away up the road. Louder and louder it grew, and in a moment more the team appeared: horses trotting, sled runners smoking, logs pounding on the snow and gravel, driver well braced, and trying to guide them safely down.

At the top of the pitch we met Angus MacDonald. He had stopped to hitch his bridle chains and was marking his logs. Each teamster has a number, and the scaler gives him credit for all logs brought in bearing that number. If a teamster fails to bring in a reasonable amount, he hears about it right away. All the timber from this cutting was dragged or 'bob-sledded' in. That is, one end of the logs is chained to a bob-sled and the other end is allowed to drag. This method is practical only on a downhill haul, for the dragging logs make a heavy draft. Going down these mountain roads, however, there is little trouble about the draft. The all-important question is, how to keep them from

going too fast. Two bridle chains are used, one under each runner of the sled, and tail chains are wrapped around the logs, to drag on the road and thus increase the friction. Whether the butt of the log should be placed on the sled or allowed to drag is a vital issue with these teamsters. Some of them claim that the butt should be on the sled, as the heavy end should be over the bridle chains; while others insist that the butt should drag to make the tail chains dig in. The subject has undergone many a heated discussion around the bunk-house stove, but it remains unsettled. How really essential these questions become to those who work day after day and year after year in the woods, is illustrated by a little story that is in circulation in the lumbering regions.

It seems an old teamster was taking a few days off, and visiting a near-by town. It was in the days before prohibition, and our lumberman was soon in a genial frame of mind and drifted into an evangelical meeting that was being held. Being something of a singer, he joined in lustily on the song chorus and generally appeared so impressed by the service that the preacher sought him out at its close.

HAULING LOGS

THE HOSPITABLE LUMBER-CAMP CHEF

'What do you believe in, my friend?' asked the preacher.

'I believe in dragging the butts, b-gosh,' returned the old teamster.

On some of the worst pitches, the bridle chains and tail chains are not sufficient and a snub rope is also used.

Such a pitch is Devil's Dip — the worst on that road. One end of the rope, which must be one of great strength, is attached to the sled; then it is wound around the snubbing post and a man with a lever keeps it running slowly. We jumped on the first team that passed and rode down. The way down is almost perpendicular in places. I was thoroughly scared long before we reached the bottom, but it seemed to affect the teamster not at all. In fact, he never allows anything to affect him. He knows that the foreman expects results — and usually gets them. He is there to get in logs, and logs he must get in. What becomes of horses or harnesses or sleds, or drivers is only a secondary matter. Only a few days before, the snub rope had broken while a team was coming down Devil's Dip. The driver jumped. Horses, sled, and load went over the bank and into the brook below. The

sled and load and one of the horses are there yet. The other horse went back to work next morning.

We stayed on the pitch until the last team was down. Then Billy Stewart, who tended snub rope, had a little leisure, so we joined forces and went up to the chopping crews. They were in a peck of trouble. Three trees had lodged together and refused to come down. A chopping crew is made up of three men — two choppers and a swamper. For some reason the head chopper in this crew was not popular with his helpers. Whether or not this had anything to do with the lodged trees, I cannot say. Anyway, the helpers seemed mighty well pleased about something. In a short time the teams would be back and no logs were ready. Of course, the blame would fall on the head chopper. But Billy Stewart did not share in this little grouch and lent a willing hand to help get the trees down. One man cut a notch in one side of a tree, and Billy, using a peavy as a lever, pried on it from the other side; finally it gave way and all came crashing down. All hands then went to work limbing out.

Soon we heard shouting from another crew and knew that the teams were loading; so we went over. Angus MacDonald was just ready to start down.

He had the lightest team in the camp, but they were good on a pull. He had on an unusually big load this time, long logs and heavy, and the chopping crew was much interested to see whether or not he could start it. The horses had to dig right in, and the snow flew from their iron calks before it started, but once on the move it was comparatively easy to keep it going, for it was mostly all downhill. Soon the teams were all loaded once more, and a cookee, with old Jerry, the camp horse, hitched in a pung sled brought up the dinner for the crews. They do not have time to go to camp for dinner; so this meal is brought to them. We lunched with them and went down on the first team afterward.

At the landings, down by the camp, a scaler and six or seven men are kept busy, unloading teams, rolling down and loading cars. A good deal of lumber accumulates on these skidways during the winter. If the sledding is good, the teams haul it in faster than the train can take it down, but the train can run all summer and the teams cannot. Some of the camps are not served by the logging railroad and two-sled teams take the logs from the camp landings and haul them out to the mills. At other places the winter's cut is piled upon the ice of

the river to await the spring break-up and the high water which starts the river drive.

Most interesting phases of lumber camp life are the evenings in the bunk-house. Winter days are short and winter evenings are long. As soon as supper is over, the men gather around the big box stove and smoke and tell stories and discuss lumbering in all its different forms. The average crew is made up of men who have logged in many localities from the Pacific Coast to Northern Canada and Maine, so many are the stories that are told. Nor is lumbering the only field in which they are experienced. Many of them are professional trappers, hunters, fishermen, and each has a fund of information if he can be persuaded to divulge it.

The lumber woods in winter are a mighty interesting place to visit, but it causes one no little regret to see our forests slaughtered. The company operating where we visited practices more or less conservation in their methods of cutting and handling; but there is a town only a few miles farther north where a single big concern operates a saw mill, pulp mill, clothes-pin factory, etc., and, to keep these all running, they have stripped the mountain-sides until they are as bare as your hand.

The rains and melting snows soon wash away the unprotected soil, leaving nothing but unproductive barrenness. At this rate, our beautiful forests and mountains would soon become a great, unattractive waste. But our country is not altogether asleep in regard to these matters, and large tracts of forest land are now owned by the Government and handled on a scientific basis, which means that nothing can be cut under a specified size and that all brush and débris must be so cared for as to reduce the possibility of fires to a minimum. One of the main objects of the National Forest idea is to prevent the watersheds of some of our main streams from becoming denuded of timber. It has been noted that the waters from these rivers are very high in spring freshets and very low in summer. The industries of the valley are obliged to shut down, first on account of too much water, then for lack of it. It is believed that plenty of timber growth on the high headwaters would act as a great sponge and hold the water of the spring rains and deal it out gradually all summer long. This will help industry to an enormous extent, and in addition the Government will realize considerable revenue from the forests if they are handled in a

conservative manner. In addition to the National Forests are many Federal and privately owned parks on which no cutting whatever is allowed and which are to preserve Nature and the woods as a perpetual playground for all time.

Chapter XXII

WHEN WINTER WANES

WINTER usually comes in our Northern States sometime in November; that is, the lakes and streams freeze over and the first permanent snows arrive. While the skating and other ice sports are at their best as soon as the ice is thick enough to bear, it is not usually until about Christmas that we get sufficient snow for snowshoeing. For coasting, and tobogganing, too, the less snow the better, so long as there is no bare ground. But for nearly all the snow sports the latter part of the season is better. When winter begins to wane, the snows settle and pack and make for easier travel on snowshoe and ski, and everything is better for a protracted winter vacation. I usually go out for near-home trips as soon as there is ice for skating and snow for the ski, but for any lengthy vacation, such as a camping trip, I wait until very near the first of March.

The average city dweller is apt to regard the month of March as one of spring. In our Northern

States, however, if we venture out into the woods, we are quite apt to find that genuine winter weather will prevail during the first half of the month.

As I scan the pages of a collection of notebooks that record outdoor happenings of the past twenty years, I find that many of my best cold-weather outings took place after the February sheet had been torn from the calendar. Almost every sport is mentioned in the March entries — snowshoeing, ski-ing, ice-fishing, coasting (on the crust), fox and rabbit-hunting, mountain-climbing.

I remember one year in particular starting on a snowshoe trip through the White Mountains on the last day of February. The trip was a long one, covering almost the entire region. We were out for ten days, clear, crisp, bright, glorious days, and not until the day we started for home did it thaw any at all. Nor was that season any exception to the ordinary rule. While the first of March may see many city streets quite bare of snow, there will be upward of four feet back in the woods for many days yet to come.

There was a time when I thought I had to crowd all my winter holidays into the season around Christmas and New Year's, but as I get older I am

content to leave the wallowing, knee-straining, nerve-racking struggles with snowshoes in the soft, fluffy snows of early winter to those who are younger, and curb my patience until the winds, aided and abetted by two or three thaws, have settled and packed the snow until its surface affords the easiest kind of going on either snowshoe or ski. If, on the top of this crust, we can have a light fall of new snow — just a couple of inches to deaden the sound of the snowshoe or the scrape of the ski — we have the finest conditions of all the winter. This new snow receives and records the trails of the wild creatures that roam the woods. Of these there are more than would have been seen a month earlier, for the advancing season has brought forth some — such as the skunk and the raccoon — from their hibernation.

By this time of year we have got used to Jack Frost's boisterous ways; that is, we have become accustomed to cold weather, got toughened in, so that the same temperature does not affect us as it did earlier in the winter. Then, too, the days have stretched out quite a bit, and even the longest days are all too short when they are holidays. This is especially true if you are camping out, and it is

surprising how much the difference really is. According to an almanac that I happen to have at hand, Old Sol favors us with his direct smile for only nine hours and three minutes during the latter part of December. Two months later he will peep up over the eastern horizon a good hour earlier each morning and stay with us more than an hour later each night, making a total difference in the length of day of two hours and thirteen minutes. This is of quite a bit of consequence when there are so many camp chores as are connected with a winter camp. And as the sun gets back nearer, its warmth affords quite a little relief at midday, though the mercury will probably drop just as low at night.

'When the days begin to lengthen, then the cold begins to strengthen.' This is probably more true than most of the old sayings regarding the weather, paradoxical though it may sound. The reason is that the heat which was stored under the surface of the earth during the summer has been exhausted and radiation has stopped. Old Boreas has conquered and the Frost King rules the land. Then, by the first of March the old earth gets canted around so that the rays of the sun get a new slant at it, and we observe a new conquest of the elements

— the efforts of Old Sol to wrest the land from the rule of the storm gods.

These battles of the elements are always interesting. The March conflict begins with a cautious preliminary sparring. The sun slips up some day and plies his warm rays to the southern slopes, loosening up the icy bands and starting little streams trickling out of the snow. Then at night Old Boreas comes roaring back and seals them all up again. For several days this may go on, back and forth, with a perceptible gain on the part of the sun. Then, when it appears that Old Sol is sure of victory, Boreas rallies all his forces and delivers a final blow in the form of a howling blizzard. This, however, is the final gasp — the last convulsive efforts of a dying season which are soon counteracted when the sun again steps into the ring. Then some morning come the bluebird and the robin to tell us, officially, that spring is here.

A good workable itinerary for the winter vacationist would list skating as soon as the ice is hard enough and continuing until snow covers the ice and puts a stop to it. Of course, in communities where the ice is kept clean or a covered rink is available, this sport may be continued all through

the winter. Hockey, of course, goes with skating, and curling is in the same class so far as natural conditions exist. Coasting should start as soon as there is sufficient snow, and it will be found that a small amount will tread down and make a better surface than too great a depth. By choosing smooth fields, ski-ing, too, may be commenced on the first snows. These are all to be near-home trips, evenings, afternoons, one-day outings; but they serve to fill in the time until carnival season, which comes sometime between February first and Washington's Birthday. Attend a good one, and it will work up your enthusiasm for a real trip into the woods or over the mountains, and these should never be undertaken before the latter part of February or the first of March. There are several reasons for this. In the first place, one has by that time become accustomed to winter weather and hardened into the cold so that he is not so sensitive as earlier in the season. Secondly the days are longer, which is well worth consideration when there is so much camp work that you must do and so many other things that you want to do. Besides, the snow is packed and firm which makes for easy getting around on either snowshoe or ski.

When Winter Wanes

As there is no distinct dividing line between the seasons, it is to be expected that the sports of winter and spring will sometimes overlap. A case in point is the visit to maple-sugar camps, for while the making of maple sugar is an industry of springtime, it begins while there is still considerable snow, and therefore has a flavour of winter.

The making of maple sugar is ever an interesting process. It starts with the first warm spring days when the sap of the maples starts upward. By boring a hole through the bark and into the sap wood a supply of this sap may be secured from each tree. A small spout is inserted in the hole and the sap caught in buckets. It is then gathered and hauled to the sugar house where it is boiled down to the desired consistency. There is a romanticism connected with this work that appeals to any one, although the modern methods are more practical and matter-of-fact than the old forked stick and iron kettle process.

Nowadays the buckets are provided with covers which do away with the work of boiling down a lot of rainwater and results in much better sugar. Modern draw tubs and holders are of galvanized iron which never colors the product. The evapo-

rator is a long pan, divided into several compartments which are connected by siphons. The sap is fed in at one end and the syrup drawn off at the other.

The product commonly called 'maple syrup' is made by simply boiling the sap down until it will weigh eleven pounds to the gallon. But a much more simple way of determining when it is of the proper consistency is by using thermometers. These are made especially for the work and so marked that their reading is easy. The thicker the syrup gets, the higher the mercury climbs. When it reaches 216°, it is just right for syrup. If it is not so thick as this, it is not sure to keep, and if thicker, it will crystallize in the bottom of the can.

It is seldom boiled down more than this in the evaporator, but drawn off, and if other products are to be made, the boiling is continued in a smaller pan on another arch known as the 'sugaring-off pan.' When the thermometer registers 228°, the sugar will grain. For maple cream the mercury must climb to 230° before the liquid is removed from the fire, and for this confection it is allowed to become cool before it is stirred. It is then stirred vigorously until of a light color, but should not

COLLECTING THE SAP

DELIVERY AT THE SUGAR-HOUSE

have the least bit of grain. It contains all of the good maple flavor and is so smooth that it will melt in your mouth. At 234° the sugar is just right to be stirred down and poured into moulds for cakes. For soft sugar it is boiled to 234°, stirred a very little, and poured into pails, while if it is boiled to 236° or 238°, it grains rapidly and may be stirred dry and a powder formed known as 'dry sugar.'

No two farmers or sugar-makers practice exactly the same methods of handling this product, and it is most interesting to go from one orchard to another and study the operations.

And usually by the time that sugaring is over, winter has become a thing of the past, and we shall soon be counting the days until another season will bring the ice and snow once more.

THE END

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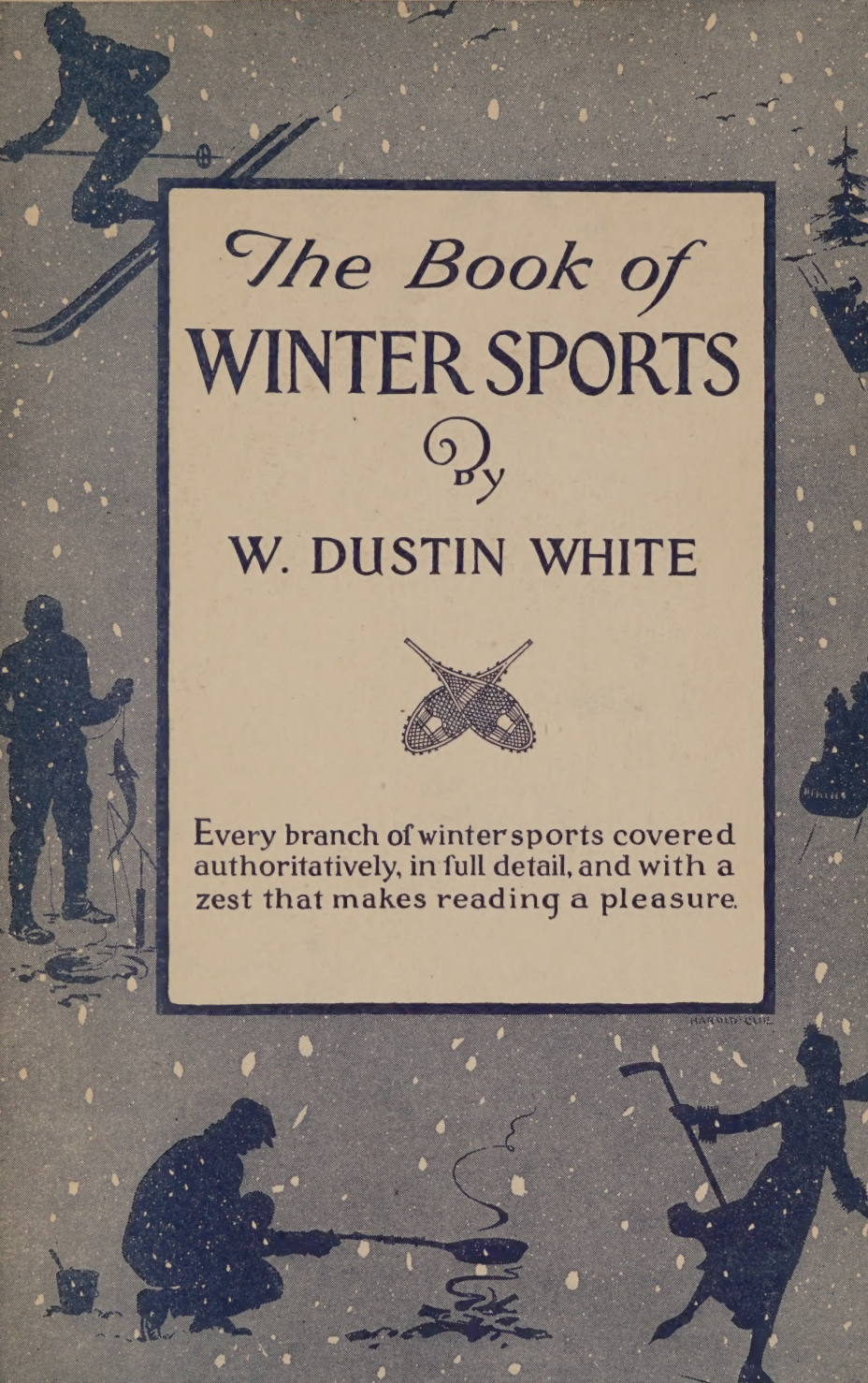

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